

**WEST**
  

L10: Entry 27 of 30

File: DWPI

Aug 23, 1990

DERWENT-ACC-NO: 1990-275139

DERWENT-WEEK: 200030

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TITLE: Prepn. of glycoside ester(s) - by reacting methyl glycoside with fatty acid and enzyme catalyst

INVENTOR: BJORKLING, F; GODTFREDSEN, S E ; KIRK, O ; BJOERKLING, F ; GODTFREDSE, S E

## PATENT-ASSIGNEE:

ASSIGNEE	CODE
NOVO-NORDISK AS	NOVO

PRIORITY-DATA: 1989DK-0000768 (February 17, 1989)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
WO 9009451 A	August 23, 1990		035	
KR 163962 B1	November 16, 1998		000	C12P007/62
AU 9051597 A	September 5, 1990		000	
FI 9103863 A	August 15, 1991		000	
EP 458847 A	December 4, 1991		000	
NO 9103214 A	October 14, 1991		000	
JP 04503453 W	June 25, 1992		011	C12P019/44
US 5200328 A	April 6, 1993		008	C12P019/04
AU 638976 B	July 15, 1993		000	C12P007/62
NO 300044 B1	March 24, 1997		000	C12P007/62
EP 458847 B1	November 19, 1997	E	014	C12P007/62
DE 69031732 E	January 2, 1998		000	C12P007/62
ES 2111535 T3	March 16, 1998		000	C12P007/62
JP 2915569 B2	July 5, 1999		011	C12P019/44
FI 104265 B1	December 15, 1999		000	C12P019/44

DESIGNATED-STATES: AU CA FI JP KR NO US AT BE CH DE DK ES FR GB IT LU NL SE AT BE CH  
DE ES FR GB IT LI LU NL SE AT BE CH DE DK ES FR GB IT LI LU NL SE

CITED-DOCUMENTS: 3.Jnl.Ref; JP 62195292 ; JP 62289190 ; JP 63112993 ; US 3597417 ; US 4614718 ; US 4719178 ; US 4687843

## APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
KR 163962B1	August 16, 1991	1991KR-0700915	
EP 458847A	February 15, 1990	1990EP-0903327	
JP 04503453W	February 15, 1990	1990JP-0503803	
JP 04503453W	February 15, 1990	1990WO-DK00040	
JP 04503453W		WO 9009451	Based on
US 5200328A	March 16, 1990	1990US-0494702	
AU 638976B	February 15, 1990	1990AU-0051597	
AU 638976B		AU 9051597	Previous Publ.
AU 638976B		WO 9009451	Based on
NO 300044B1	February 15, 1990	1990WO-DK00040	
NO 300044B1	August 16, 1991	1991NO-0003214	
NO 300044B1		NO 9103214	Previous Publ.
EP 458847B1	February 15, 1990	1990EP-0903327	
EP 458847B1	February 15, 1990	1990WO-DK00040	
EP 458847B1		WO 9009451	Based on
DE 69031732E	February 15, 1990	1990DE-0631732	
DE 69031732E	February 15, 1990	1990EP-0903327	
DE 69031732E	February 15, 1990	1990WO-DK00040	
DE 69031732E		EP 458847	Based on
DE 69031732E		WO 9009451	Based on
ES 2111535T3	February 15, 1990	1990EP-0903327	
ES 2111535T3		EP 458847	Based on
JP 2915569B2	February 15, 1990	1990JP-0503803	
JP 2915569B2	February 15, 1990	1990WO-DK00040	
JP 2915569B2		JP 4503453	Previous Publ.
JP 2915569B2		WO 9009451	Based on
FI 104265B1	February 15, 1990	1990WO-DK00040	
FI 104265B1	August 15, 1991	1991FI-0003863	
FI 104265B1		FI 9103863	Previous Publ.

INT-CL (IPC) : A61 K 7/00; A61 K 7/075; A61 K 7/50; C07 H 15/04; C11 D 1/66; C11 D 1/68; C11 D 3/38; C11 D 3/386; C12 P 7/62; C12 P 19/04; C12 P 19/44

ABSTRACTED-PUB-NO: EP 458847B

BASIC-ABSTRACT:

Glycoside esters (RCO<sub>2</sub>)-X-OMe (I) (R = 4-24C alkyl opt. substd. by OH or halogen; X = carbohydrate comprising 1-3 monosaccharide units; n = 1-3) are prep'd. by reaction of the acid (or ester) RCO<sub>2</sub>R<sub>1</sub> (II) (R<sub>1</sub> = H or lower alkyl) with the glycoside X-OMe (III) in the presence of an enzyme catalyst.

In (I) and (II), each monosaccharide unit is pref. a hexose or pentose, esp. in furanose or pyranose form. The moiety X-OMe may be present in alpha- and/or beta-anomeric form, esp. a mixt. contg. at least 10% partic. at least 20% e.g. 20-99% by wt. of the beta-anomer. Pref. cpds. have X = monosaccharide (pref. fructose, ribose, arabinose, xylose and mannose, esp. glucose or galactose), or disaccharide (esp. sucrose, lactose, maltose, cellobiose, and isomaltose); and R = 6-22C alkyl. Esp. prefd. (I) have RCO are hexanoyl, heptanoyl, octanoyl, nonanoyl, decanoyl, dodecanoyl, tetradecanoyl, hexadecanoyl, octadecanoyl, eicosanoyl, docosanoyl, cis-9-octadecenoyl, cis, cis-9, 12-octadecadienoyl, or cis, cis, cis-9, 12, 15-octadecatrienoyl (the prepn. of all these Me 6-O-(RCO)glucosides is specifically claimed) and arachinoyl, arachidonoyl, or behenoyl.

USE/ADVANTAGE - The process affords high yields of Me glycoside esters (I) from inexpensive materials, using enzymatic catalysts but no toxic solvents.

## ABSTRACTED-PUB-NO:

US 5200328A

## EQUIVALENT-ABSTRACTS:

A process for preparing a compound of the general formula (R-COO)<sub>n</sub>-X-OCH<sub>3</sub> (I) wherein R is alkyl with 7-24 carbon atoms, X is a monosaccharide unit, and n is 1 or 2, the process comprising reacting an acid or ester of the general formula R-COOR<sub>1</sub> (II) wherein R is as defined above, and R<sub>1</sub> is hydrogen or lower alkyl, with a glycoside of the general formula X-OCH<sub>3</sub> (III) as defined above, in the presence of a lipase.

Methyl glycoside fatty acid esters of formula RCOO-X-OCH<sub>3</sub> (I) are prep'd. by reacting acid or ester of formula RCOOR<sub>1</sub> (II) with glycoside of formula X-OCH<sub>3</sub> (III) in a non-aq. medium or solvent other than acid or ester contg. an immobilised lipase. In formulae, R is 7-24C alkyl opt. substn. by OH or halogen, X is a monosaccharide contg. 1 hexose or pentose unit carrying OCH<sub>3</sub> at the anomeric-C and RCOO at the prim. OH, and R<sub>1</sub> is H or 1-6C alkyl. Pref. X is glucose, fructose, ribose, galactose etc. Lipase is produced by e.g. Candida antarctica, Pseudomonas cephalic etc. USE - Used as surfactants in cleaning compsns. or personal care prods.

WO 9009451A

CHOSEN-DRAWING: Dwg.0/1 Dwg.0/0 Dwg.0/1

TITLE-TERMS: PREPARATION GLYCOSIDE ESTER REACT METHYL GLYCOSIDE FATTY ACID ENZYME CATALYST

DERWENT-CLASS: D16 D21 D25 E13

CPI-CODES: D08-B13; D11-A03; E07-A02D; E07-A02H;

## CHEMICAL-CODES:

Chemical Indexing M3 \*01\*

## Fragmentation Code

F012 F013 F014 F015 F016 F019 F113 F123 F199 H4  
H404 H405 H421 H422 H423 H424 H481 H482 H483 H484  
H5 H521 H522 H581 H600 H608 H609 H681 H682 H683  
H689 H721 H722 H723 H8 J0 J011 J012 J013 J2  
J221 J222 J271 J272 J273 K0 L8 L811 L812 L814  
L815 L816 L818 L819 L821 L822 L823 L831 M126 M129  
M141 M149 M210 M211 M214 M215 M216 M220 M221 M222  
M223 M224 M225 M226 M231 M232 M233 M262 M272 M281  
M282 M283 M311 M314 M315 M316 M321 M322 M323 M331  
M332 M333 M342 M344 M349 M362 M373 M381 M391 M392  
M393 M413 M510 M521 M522 M523 M530 M540 M720 M903  
N134 N209 N241 N309 N341 Q252 Q254 Q273 Q616 R021

## Registry Numbers

1327U 0502U

## SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1990-118947

## WEST



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L1: Entry 10 of 11

File: USPT

May 21, 2002

DOCUMENT-IDENTIFIER: US 6391837 B1

TITLE: Cleaning composition and method comprising a ternary solvent blend

Brief Summary Paragraph Table (3):

TABLE III Name Type Chemical Family HLB Company Alfonic 1412-3 Nonionic Ethoxylated Linear Alcohol (40% E/O) 8.0 Condea Vista Alfonic 810-2 Nonionic Ethoxylated Linear Alcohol (40% E/O) 8.0 Condea Vista BioSoft E-400 Nonionic Primary Alcohol Ethoxylate 8.0 Stepan BioSoft TD-400 Nonionic Primary Alcohol Ethoxylate 8.0 Stepan Delonic LF-EP-30 Nonionic Alkoxylated Linear Alcohol 8.0 DeForest Genapol 26-L-3 Nonionic Natural Linear Alcohol Ethoxylate 8.0 Clariant Genapol 26-L-3 Nonionic (C.sub.12-16) Natural Linear Alcohol Ethoxylate 8.0 Clariant Iconol TDA-3 Nonionic TriDccyl Alcohol 8.0 BASF Rhodasurf LA-3 Nonionic (C.sub.12-15) Straight Chain Fatty Alcohol Ethoxylate 8.0 Rhodia Surfonic L24-3 Nonionic Linear Alcohol Ethoxylate 8.0 Huntsman Surfonic TDA-3B Nonionic Linear Alcohol Ethoxylate 8.0 Huntsman T-Det A-243 Nonionic Linear Alcohol Ethoxylate 8.0 Harcross Ethal EH-2 Nonionic Ethoxylated Alcohol 8.1 Ethox Surfonic LA-3 Nonionic Linear Alcohol Ethoxylate 8.2 Huntsman Surfonic L12-2.6 Nonionic Linear Alcohol Ethoxylate 8.2 Huntsman Tergitol 15-S-3 Nonionic C.sub.12-14 Secondary Alcohol Ethoxylate 8.3 Union Carbide Neodol 91-2.5 Nonionic C.sub.9-11 Linear Primary Alcohol Ethoxylate 8.5 Shell Tomadol 91-2.5 Nonionic Linear Primary Alcohol Ethoxylate 8.5 Tomah Neodol 1-3 Nonionic C.sub.9-11 Linear Primary Alcohol Ethoxylate 8.7 Shell Canada Tomadol 1-3 Nonionic C.sub.9-11 Linear Primary Alcohol Ethoxylate 8.7 Tomah Trycol 5966 Nonionic Ethoxylated Alcohol 8.7 Henkel Precept Series 8140 Amphoteric Lecithin & Derivitives 8.0-9.0 Central Soya Precept Series 8160 Amphoteric Lecithin & Derivitives 8.0-9.0 Central Soya Promidium SX PPG-3 Nonionic Hydroxyethyl Soyamide 8.0-9.0 Uniqueema (ICI) Blendmax Series Amphoteric Enzyme Modified Lecithin 8.0 Central Soya Clearate WDF Nonionic Soya Lecithin 8.0 W. A. Cleary Mazclean EP Nonionic Orange Oil Emulsifier n/a PPG Mazer Videt ME-80 Anionic Orange Oil Emulsifier n/a Vitech Int'l EZ-Mulze Anionic Orange Oil Emulsifier n/a Florida Chem Videt QX-9 Anionic Specialty Surfactant Blend n/a Vitech Int'l

## WEST

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C1 alcohol

File: USPT

L1: Entry 8 of 11

last ingred.  
in copy.

Dec 24, 2002

DOCUMENT-IDENTIFIER: US 6498137 B1

TITLE: Aerosol cleaning composition containing an organic acid and a spore forming microbial composition

Detailed Description Text (43):

Non-ionic materials that may be utilized include fatty amines or oxides, fatty alkanolamides, alkyl polyglucosides and linear alcohol ethoxylates. Preferred surfactants are secondary alcohol ethoxylates, betaines, sultaines and amine oxides. Preferred alcohol ethoxylates and ethoxysulfates are available under the trademark Tomadol (trademark for surfactants of Tomah). Tomadol products include linear primary alcohols in a C<sub>sub</sub>.9 -C<sub>sub</sub>.15 alkyl range, ethoxylate non-ionic surfactants and ethoxy sulfate.

Detailed Description Paragraph Table (3):

AMOUNT NAME (% by weight) PURPOSE Deionized Water 50 to 70% Solvent/Carrier  
 Bacterial Spores 0.02% Bacterial Activity Citric Acid 0.1 to 4.0% Cleaning and Disinfecting Quaternary ammonium 0.05 to 0.3% chloride compound (BTC 818, 835 or 2125M) Nonionic associative 0.1 to 2.0% Thickening Agent thickener (Acusol 880, Natrosol 250) Fragrance Trace End-user Appeal Isobutane 1.0 to 8.0% Propellant Sodium Nitrite Trace Preservative (preservative - can) Nonionic surfactant 1 to 10% Wetting Agent (Tomadol 1-7, 15-S-9, N-10) Amphoteric surfactant 1 to 10% Wetting Agent

Detailed Description Paragraph Table (5):

TABLE 1 Ingredient Formula A Formula B Formula C Organic Acid 6% Citric 6% Citric 5% Glycolic N-alkyl dimethyl benzyl 0.4% 0.1% 0.1% ammonium chloride Alcohol ethoxylate (7 EO) 0.38% 0.38% 0.38% Tomadol 1-7 Alcohol ethoxylate (3 EO) 0.12% 0.12% 0.12% Tomadol 1-3 Soyamine Thickener 5.0% 3.0% 5.0% Bacterial Spores 0.01% 0.01% 0.01% Blend of: Bacillus subtilis Bacillus licheniformis Bacillus megaterium Bacillus anyloliquefaciens (Equal ratio of all four) Sodium Chloride 2.7% 2.7% 2.7% \*All percentages are based on actives % by weight w/ balance water.

Detailed Description Paragraph Table (6):

TABLE 2 Formulations Ingredient Formula A Formula B Organic Acid 6% Glycolic 6% Glycolic N-alkyl dimethyl benzyl 0.1% 0.0% ammonium chloride Alcohol ethoxylate (7 EO) 0.38% 0.38% Tomadol 1-7 Alcohol ethoxylate (3 EO) 0.12% 0.12% Tomadol 1-3 Soyamine Thickener 5.0% 3.0% Bacterial Spores 0.01% 0.01% Blend of: Bacillus subtilis Bacillus licheniformis Bacillus megaterium Bacillus anyloliquefaciens (Equal ratio of all four) Sodium Chloride 2.7% 2.7% \*All percentages are based on actives % by weight w/ balance water.

Detailed Description Paragraph Table (7):

TABLE 3 Formulation Ingredient Formula A Organic Acid 8% Citric Acid Xanthan Gum 0.15% Alcohol ethoxylate (7 EO) Tomadol 1-7 0.75% Alcohol ehtoxylate (3 EO) 0.25% Tomadol 1-3 Fragrance <0.5% Bacterial Spores 0.02% Blend of: Bacillus licheniformis Bacillus anyloliquefaciens Dye Trace \*All percentages are based on actives % by weight w/ balance water.

**WEST****End of Result Set** [Generate Collection](#) [Print](#)

L1: Entry 11 of 11

File: USPT

May 14, 2002

DOCUMENT-IDENTIFIER: US 6387874 B1

TITLE: Cleaning composition containing an organic acid and a spore forming microbial composition

Detailed Description Text (62):

Non-ionic materials that may be utilized include fatty amines or oxides, fatty alkanolamides, alkyl polyglucosides and linear alcohol ethoxylates. Preferred surfactants are secondary alcohol ethoxylates, betaines, sulfaines and amine oxides. Preferred alcohol ethoxylates and ethoxysulfates are available under the trademark Tomadol (trademark for surfactants of Tomah). Tomadol products include linear primary alcohols in a C<sub>sub</sub>.9 -C<sub>sub</sub>.15 alkyl range, ethoxylate non-ionic surfactants and ethoxy sulfate.

Detailed Description Paragraph Table (4):

TABLE 1 Ingredient Formula A Formula B Formula C Organic Acid 6% Citric 6% Citric 5% Glycolic N-alkyl dimethyl benzyl 0.4% 0.1% 0.1% ammonium chloride Alcohol ethoxylate (7 EO) 0.38% 0.38% 0.38% Tomadol 1-7 Alcohol ethoxylate (3 EO) 0.12% 0.12% 0.12% Tomadol 1-3 Soyamine Thickener 5.0% 3.0% 5.0% Bacterial Spores 0.01% 0.01% 0.01% Blend of: *Bacillus subtilis* *Bacillus licheniformis* *Bacillus megaterium* *Bacillus anyloliquefaciens* (Equal ratio of all four) Sodium Chloride 2.7% 2.7% 2.7% \*All percentages are based on actives % by weight w/ balance water.

Detailed Description Paragraph Table (5):

TABLE 2 Formulations Ingredient Formula A Formula B Organic Acid 6% Glycolic 6% Glycolic N-alkyl dimethyl benzyl 0.1% 0.0% ammonium chloride Alcohol ethoxylate (7 EO) 0.38% 0.38% Tomadol 1-7 Alcohol ethoxylate (3 EO) 0.12% 0.12% Tomadol 1-3 Soyamine Thickener 5.0% 3.0% Bacterial Spores 0.01% 0.01% Blend of: *Bacillus subtilis* *Bacillus licheniformis* *Bacillus megaterium* *Bacillus anyloliquefaciens* (Equal ratio of all four) Sodium Chloride 2.7% 2.7% \*All percentages are based on actives % by weight w/ balance water.

Detailed Description Paragraph Table (6):

TABLE 3 Formulations Ingredient Formula A Organic Acid 8% Citric Acid Xanthan Gum 0.15% Alcohol ethoxylate (7 EO) Tomadol 1-7 0.75% Alcohol ehtoxylate (3 EO) Tomadol 1-3 0.25% Fragrance <0.5% Bacterial Spores 0.02% Blend of: *Bacillus licheniformis* *Bacillus anyloliquefaciens* Dye Trace \*All percentages are based on actives % by weight w/ balance water.

## WEST

 Generate Collection 

L1: Entry 9 of 11

File: USPT

Nov 5, 2002

DOCUMENT-IDENTIFIER: US 6475501 B1

TITLE: Antiviral compositions for tissue paper

Brief Summary Text (111):

A preferred alkoxylated alcohol is a C.<sub>sub.12</sub> to C.<sub>sub.15</sub> polyethoxylated alcohol commercially available as Tomadol 25-12 from Tomah Products Incorporated of Reserve, Louisiana or as Neodol 25-12 from Shell Chemicals of Houston, Tex. (condensation product of C.<sub>sub.12</sub> -C.<sub>sub.15</sub> linear alcohols with an average of about 12 moles of ethylene oxide).

Detailed Description Text (11):

The virucidal composition for this sample was made by heating aqueous aluminum sulfate (iron free, approximately 48.8% (wt/wt) Al.<sub>sub.2</sub> (SO.<sub>sub.4</sub>).<sub>sub.3</sub>) available from Holland Company, Inc., Adams, Mass.) to 120 degrees Fahrenheit and thereafter combining Tomadol 25-12 (from Tomah Products Inc., Reserve, La., USA) with a shaft mixer to produce a 48% by weight Aluminum sulfate and 0.5% by weight Tomadol 25-12 solution. The solution was then extruded onto the fabric side of 1-ply of a cellulosic fibrous substrate as is commonly used in Puffs.RTM. Advanced Extra Strength tissue substrate. The addition rate of the virucidal composition was controlled to produce approximately a 10% by weight add-on of aluminum sulfate and 0.1% by weight add-on of Tomadol 25-12 to dry tissue.

Detailed Description Text (13):

The virucidal composition for Tissue Sample 5 was made according to the same procedure utilized for Tissue Sample 4. The only difference was in the add-on level for Tissue Sample 5 whereby the virucidal composition was controlled to produce approximately a 5% by weight add-on of aluminum sulfate and 0.05% by weight add-on of Tomadol 25-12 to dry tissue.

Detailed Description Text (15):

The virucidal composition for Tissue Sample 6 was made according to the same procedure utilized for Tissue Sample 4. The only difference was in the add-on level for Tissue Sample 6 whereby the virucidal composition was controlled to produce approximately a 2% by weight add-on of aluminum sulfate and 0.02% by weight add-on of Tomadol 25-12 to dry tissue.

Detailed Description Paragraph Table (1):

TABLE 1 Virucidal efficacy of treated facial tissues against Rhinovirus 14 (Exposure time 1 minute) Virucidal Additives.sup.a Example Composition.sup.a Tomadol Virucidal No. Al.<sub>sub.2</sub> (SO.<sub>sub.4</sub>).<sub>sub.3</sub> CUSO.<sub>sub.4</sub> 25-12 Efficacy % 1 11.6 -- -- .gtoreq.99.97 2 7.4 -- -- 98.53 3 2.8 -- -- 87.94 4 8.2 -- 0.08 99.54 5 5 -- 0.05 97.40 6 2.6 -- 0.026 97.81 7 -- 0.61 -- 90.56 8 -- 0.31 -- 68.38 9 -- 0.15 -- 64.16 .sup.a Figures are in approximate % chemical addition on air dry tissue.

## WEST

 Generate Collection *Types of  
Anionic Surf.*

L13: Entry 5 of 9

File: USPT

Jun 4, 2002

DOCUMENT-IDENTIFIER: US 6399052 B2  
TITLE: Treating hair by targeting enzymes

Brief Summary Text (74):

Typical anionic surfactants for use in shampoos of the invention include sodium oleyl succinate, ammonium lauryl sulphosuccinate, ammonium lauryl sulphate, sodium dodecylbenzene sulphonate, triethanolamine dodecylbenzene sulphonate, sodium cocoyl isethionate, sodium lauryl isethionate and sodium N-lauryl sarcosinate. The most preferred anionic surfactants are sodium lauryl sulphate, triethanolamine monolauryl phosphate, sodium lauryl ether sulphate 1EO, 2EO and 3EO, ammonium lauryl sulphate and ammonium lauryl ether sulphate 1EO, 2EO and 3EO.

Detailed Description Text (18):

The results showed that lipase activity was present in the hair fibre extracts, with several new reaction products observed. The reaction products were identified as dioleoylglycerol, monooleoylglycerol and free oleic acid. Consequently the hair enzyme had the ability to hydrolyse the triacylglycerol into glycerol and free fatty acids. The lipid profile in control samples containing pre-boiled extract was similar to that of control samples containing substrate only. Therefore the possibility of non-enzymatic artefact in the assays could be ruled out.

**WEST** Generate Collection Print

L14: Entry 6 of 10

File: USPT

Apr 28, 1992

DOCUMENT-IDENTIFIER: US 5108457 A

TITLE: Enzymatic peracid bleaching system with modified enzyme

*Type of  
Anionic*Detailed Description Paragraph Table (9):

TABLE 9

Trioctanooin:Emulsifier Pedrolysis Enzyme (1 mg/ml) Detergent\* (% w/w) (% w/w)  
H.sub.2 O.sub.2 (ppm) (ppm)

					Reference
enzyme	0.028	9.5:0	400	4.0	Reference enzyme
					0.026 9.5:0.05 400 3.8 (sodium deoxycholate)
					Reference enzyme 0.028 9.5:0.15 381 3.4 (sodium deoxycholate)
					Reference enzyme 0.028 9.5:0.01 397 3.3 (sodium lauryl sulfonate) Lipase K 0.028
					9.5:0 505 0 Lipase CES 0.028 9.5:0 400 0 Lipase CES 0.026 9.5:6.9 417 0 (propylene glycol)

\*45.1 wt. % CALSOFT F90 (alkylbenzene sulfonate, available from Pilot Chemical Co.).  
40.8 wt. % SLS (sodium lauryl sulfate) and 14.1 wt. % NEODOL 257 (C12-C15 alcohol with an aveage ethoxylation of 7, available from Shell Chemical)

**WEST**

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L14: Entry 5 of 10

File: USPT

Jun 2, 1998

DOCUMENT-IDENTIFIER: US 5759974 A  
TITLE: Block-form cleaners for flush toilets

SPT  
Type of  
arrows

### Detailed Description Paragraph Table (19):

WC stick containing lipase Raw material Shell  
 Core \_\_\_\_\_ Sodium lauryl sulfate 12.6% 12.6% Tallow  
 alcohol + 25 EO 16.0% 16.0% Cocofatty acid monoethanolamide 6.0% 6.0% Alkylbenzene  
 sulfonate Na 12.0% 12.0% Cellulose powder 3.0% 3.0% Na citrate (dihydrate) 3.5% 3.5%  
 Na.<sub>2</sub>SO.<sub>4</sub> 24.9% 14.9% Na.<sub>2</sub>CO.<sub>3</sub> 2.0% 2.0% Perfume oil 6.0% 6.0%  
 C.<sub>16</sub> Fatty alcohol 4.0% 4.0% Lipase\* 10.0% 20.0% Total weight 50 g: Shell 25 g  
 Core 25 g \*From GistBrocades BSD BV,  
 Netherlands

WEST

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L14: Entry 4 of 10

File: USPT

Apr 11, 2000

DOCUMENT-IDENTIFIER: US 6048368 A  
 TITLE: Cleaning method for textile fabrics

*Type of  
Anion*

Detailed Description Paragraph Table (3):

Ingredient Ex. 54	Ex. 55	Ex. 56	C14-C17 alkyl		
sulphonate 27	20	35 C12-C15 alkyl ether sulphate (EO 3)	4 5 8.5 C9-C11 alkyl		
ethoxylate EO 8	5.4	11 C8-C18 alkyl sulphate 4	1.85 Water Balance Balance		
			Ingredient Ex. 57		
			Ex. 58		
			Ex. 59		
			3-(N-dodecyl-N-N-dimethyl)-2-	2 10	
			hydroxy-propane-1 sulfonate C9-C11 alkyl ethoxylate EO 2.5	1.1 5 C9-C11 alkyl	
			ethoxylate EO 6	2.9 15 C9-C11 alkyl ethoxylate EO 8	3 Butoxy Propoxy Propanol 5 25
			Oxydisuccinic acid 10	10 Sodium cumene sulfonate 4.2	20 Maleic acid 20 Water Balance
			Balance Balance pH = 1	Ingredient Ex. 60	
			C12-C13 EO 6.5 2.5 25 Dipropylene Glycol		
			Monbutyl Ether 3 30 Monoethanolamine 0.5 5 Sodium Dodecylbenzene sulfonate 0.5 3		
			Coconut Fatty acid 0.03 3 Water Balance		
			Ingredient Ex. 62		
			Ex. 63		
			Sodium Lauryl Sulphate 12.6 12.6 Isopropanol		
			3 16.5 Propylene Glycol Methyl Ether 2 Amyl Acetate 0.25 0.3 Monopotassium Phosphate		
			0.9 0.9 Methylene chloride 5 Sodium EDTA 0.05 Water Balance		
			Ingredient Ex. 64		
			Ex. 65		
			Ex. 66		
			Ex. 67		
			Ex. 68		
			Hexane 67 Decane 25 32.5 Dodecane 2.5 10		
			C12-C15 alkyl ethoxy- 20 late EO 9 C14-C15 alkyl ethoxy- 20 late EO 8 C12-C13 alkyl		
			ethoxy- 35 late EO 5.5 C16-C18 alkyl ethoxy- 12.5 40 late EO 9 Ethylene glycol 55 13		
			81 47.5 Glycerol 4 2.5 PEG 300 32.5		
			Ingredient Ex. 69		
			Ex. 70		
			Ex. 71		
			Sodium 2,6,9 trioxa-12 hexyleicosyl 6.4 sulphate Sodium dodecylbenzene sulphonate 11.7 11.7		
			Butanol 4.1 7.3 7.3 NaCl 4.4 2.9 2.9 Kerosene 8.5 isoparaffinic hydrocarbon 6.2 pine oil 8.5 Water Balance		
			Balance		
			Ingredient Ex. 72		
			Ex. 73		
			C14-C15 alkyl		
			ethoxylate EO 2.25 sulphate 18 9 C12-C13 alkyl ethoxylate EO 6.5 2 1 C12-C14		
			N-methylglucamide 6 3 Citric acid 4 2 C12-C14 fatty acid 2 1 Ethanol 4 2 1,2		
			propanediol 7 3.5 Monoethanolamine 1 0.5 Optical brightener 0.1 Soil release		
			polymer.sup.1 0.3 0.15 Boric acid 2.5 1.25 Protease 1.4 0.7 Lipase 0.18 0.09		
			Polyethylene glycol (MW 4000) 1.5 0.75 Polyaspartic acid (MW 10,000) 0.5 0.25 NaOH		
			up to up to pH = 10 pH = 10 Water Balance		
			.sup.1 Ethoxylated copolymer of		
			polyethylene-polypropylene terephthalate polysulfonic acid		
			Ingredient Ex. 74		
			Ex. 75		
			Ex. 76		
			Ex. 77		
			Ex. 78		
			Alkyl sulphate 16.75 1.6 4.48 Alkyl ethoxy		
			sulphate 2 0.2 13.58 LAS 7.57 C12-C15 alkyl ethoxy- 5.5 0.55 10 5.61 late EO 7		
			C12-C18 N-methylgluc- 5.5 0.55 amide Citric acid 1 0.1 16.8 0.63 1.56 Fatty acid		
			10.5 1.05 2.9 13.67 Carbonate 1.2 Propanediol 11.5 1.15 6.97 Ethanol 1.4 0.14 5.08		
			PEG 200-300 35 Glycerine 4.54 MEA 7.8 0.78 NaOH 1.2 0.12 Phosphonate 1 0.01 0.5 0.21		
			Zeolite 28.01 Ethoxylated tetraethyl- 0.25 0.025 enpentamine Soil release polymer		
			0.15 0.015 CMC 1 Protease 0.5 0.05 0.5 Lipolase 0.07 0.007 Amylase 0.15 0.015 0.18		
			Cellulase 0.03 0.003 CaC12 0.02 0.002 Boric acid 3.5 0.35 Silicone oil 0.2		
			Dispersant 0.02 Silica 0.013 Propyl trimethoxy- 0.02 silane Optical brightener 0.15		
			0.0147 Dye 0.001 PB1 13 PB4 2 Water Balance		
			Balance Balance pH = 8.5		

**WEST**  

L11: Entry 72 of 74

File: DWPI

Oct 18, 1989

DERWENT-ACC-NO: 1989-301848

DERWENT-WEEK: 199908

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TITLE: Uniformly solubilised tri glyceride soln - used as substrate for lipase determination

INVENTOR: MIKI, I; OCHI, H ; TSUBOTA, H ; TSUCHIKO, T ; TSUCHIKI, T

## PATENT-ASSIGNEE:

ASSIGNEE	CODE
IATRON LAB INC	IATR
IATRON LABORATORIES INC	IATR

PRIORITY-DATA: 1988JP-0091688 (April 15, 1988)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 337005 A	October 18, 1989	E	020	
KR 9601502 B1	January 31, 1996		000	C12Q001/44
AU 8820139 A	October 19, 1989		000	
JP 02243617 A	September 27, 1990		000	
US 5082769 A	January 21, 1992		014	
EP 337005 B1	December 8, 1993	E	024	C12Q001/44
DE 3886204 G	January 20, 1994		000	C12Q001/44
US 5328832 A	July 12, 1994		013	C12Q001/44
CA 1338589 C	September 10, 1996		000	C12Q001/61
JP 2711332 B2	February 10, 1998		005	A61K009/19

DESIGNATED-STATES: AT BE CH DE ES FR GB GR IT LI LU NL SE CH DE FR GB IT LI SE

CITED-DOCUMENTS: EP 14252; FR 2350604 ; US 4011045 ; US 4347313 ; WO 8002697 ;  
1.Jnl.Ref ; JP 59039168 ; JP 63091136

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
EP 337005A	July 29, 1988	1988EP-0112272	
KR 9601502B1	July 30, 1988	1988KR-0009731	
US 5082769A	July 28, 1988	1988US-0225345	
EP 337005B1	July 29, 1988	1988EP-0112272	
DE 3886204G	July 29, 1988	1988DE-3886204	
DE 3886204G	July 29, 1988	1988EP-0112272	
DE 3886204G		EP 337005	Based on
US 5328832A	July 28, 1988	1988US-0225345	Div ex
US 5328832A	September 25, 1991	1991US-0766436	
US 5328832A		US 5082769	Div ex
CA 1338589C	July 29, 1988	1988CA-0573487	
JP 2711332B2	April 15, 1988	1988JP-0091688	
JP 2711332B2		JP 2243617	Previous Publ.

INT-CL (IPC) : A23L 3/44; A61K 9/14; A61K 9/19; B01F 3/08; C12Q 1/44; C12Q 1/61; F26B 5/06; G01N 33/92

ABSTRACTED-PUB-NO: EP 337005A  
BASIC-ABSTRACT:

A triglyceride is uniformly solubilised in an aq. soln. to provide a substrate for the determination of lipase activity.

For the determination of human lipase, the triglyceride is pref. desired from fatty acids present in the human body, such as myristic, palmitic, stearic, oleic and linoleic acids. Pref. it contains at least one oleic acid residue and most pref. all the acid residues are oleic. The aq. soln. suitably contains 0.0005 wt. % or more of triglyceride and 0.0005 wt. % or more of nonionic surfactant.

USE - There is provided a sensitive and effective method for determination of very small amounts of lipase, e.g., in pahereatic juice or serum.

ABSTRACTED-PUB-NO:

EP 337005B

EQUIVALENT-ABSTRACTS:

A lyophilisate of a transparent and stable aqueous solution of a substrate for determination of lipase, comprising triglyceride uniformly solubilised therein, obtainable by a process comprising the steps of mixing the triglyceride and the nonionic surfactant in an aqueous liquid at a temperature less than cloud point to form a transparent solution; and the lyophilising the thus obtained solution, with an excipient or stabiliser selected from the group consisting of sucrose, oligo sugars, dextran, carboxymethyl cellulose, lactose and a synthetic polymer produced from sucrose and epichlorohydrin, having an average molecular weight of 400,000 +/- 100,000, an intrinsic viscosity of about 0.17 dl/g, and a specific rotation ( $\alpha$ )<sub>D20</sub> + + 56.5 deg. in an amount of 1 to 10% by weight volume, albumin in an amount of 1 to 5% by weight/volume, and potassium chloride and glycine in an amount of 5 to 10% by weight/volume.

US 5082769A

Human pancreatic lipase (I) is determined in a sample by firstly placing the sample in contact with a transparent aq. soln. contg. a triglyceride (II), as substrate, in the presence of an agent for accelerating lipase activity, to hydrolyse (II) to liberate fatty acids. (I) is then determined by measuring an amt. of the liberated fatty acids.

The transparent aq. soln. contg. (II) has been prep'd. by (a) adding (II) to an aq. soln. contg. a nonionic surfactant, to form a mixt.; (b) adding a builder, selected

from a salt of an inorganic acid and a salt of an organic acid, to the mixt. to lower the cloud point of the nonionic surfactant-contg. aq. soln. to about room temp.; and (c) diluting the mixt. with water or an aq. buffer soln., while stirring to form a transparent soln.

USE/ADVANTAGE - Method is provided for a sensitive and effective determination of a very small amt. of lipase, esp. in pancreatic juice, serum, etc. (14pp)

US 5328832A

Determining human pancreatic lipase in a sample comprises: (i) placing the sample in contact with a transparent aq. soln. contg. a triglyceride as a substrate, in the presence of a cpd. which accelerates lipase activity and hydrolyses the triglyceride thus liberating fatty acids (LFA), and (ii) measuring the amt. of LFA.

The transparent aq. soln. contg. triglyceride (TG) is prep'd. by (a) adding TG to aq. soln. contg. a nonionic surfactant; (b) heating to at least cloud point temp.; (c) cooling to below cloud pt. with stirring to form a transparent soln.; (d) lyophilising in the presence of an excipient or stabiliser selected from sucrose, raffinose, lactose, dextran, carboxymethylcellulose, FICOLL (RTM), albumin, and/or glycine; and (e) dissolving in aq. soln.

ADVANTAGE - The transparent aq. soln. can be stored for a long term.

CHOSEN-DRAWING: Dwg.0/2 Dwg.0/2 Dwg.0/2

TITLE-TERMS: UNIFORM SOLUBLE TRI GLYCERIDE SOLUTION SUBSTRATE LIPASE DETERMINE

DERWENT-CLASS: B04 D16 Q76

CPI-CODES: B04-B02C3; B04-B02D4; B10-G02; B12-K04A; D05-A02C; D05-H09;

CHEMICAL-CODES:

Chemical Indexing M1 \*02\*

Fragmentation Code  
M423 M750 M903 N102 Q233 V802 V814  
Registry Numbers  
1704X 1724X 1711X 1714X 89290

Chemical Indexing M1 \*03\*

Fragmentation Code  
M423 M760 M903 N102 Q233 V600 V614 V634  
Registry Numbers  
1704X 1724X 1711X 1714X 89290

Chemical Indexing M2 \*01\*

Fragmentation Code  
H721 H722 H723 J0 J013 J2 J273 M220 M221 M222  
M223 M224 M225 M231 M262 M283 M313 M321 M332 M343  
M383 M391 M416 M620 M781 M903 P831 Q233  
Markush Compounds  
198942-03201-D  
Registry Numbers  
1704X 1724X 1711X 1714X 89290

Chemical Indexing M6 \*04\*

Fragmentation Code  
M903 P831 Q233 R515 R611 R613 R627 R632  
Registry Numbers  
1704X 1724X 1711X 1714X 89290

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1989-133440

**WEST** Generate Collection 

L19: Entry 22 of 27

File: USPT

Mar 19, 1996

DOCUMENT-IDENTIFIER: US 5500154 A  
TITLE: Detergent compositions containing enduring perfume

Abstract Text (1):

A detergent composition containing efficient enduring perfume composition is provided. Specifically, the detergent composition comprises: a perfume composition comprising at least about 70% of enduring perfume ingredients characterized by having boiling points, measured at the normal, standard pressure, of about 250.degree. C. or higher, and an octanol/water partitioning coefficient P of about 1,000 or higher, i.e., having a logP, or calculated logP, of about 3 or higher. The perfume is substantially free of halogenated fragrance materials and nitromusks. The composition also contains from about 0.01% to about 95% of a detergent surfactant system, preferably containing anionic and/or nonionic detergent surfactants. The compositions can be in the form of granules, liquids, pastes, bars, etc.

Brief Summary Text (8):

The present invention relates to laundry detergent compositions comprising perfumes that provide a long lasting aesthetic benefit with a minimum amount of material ("enduring perfume"). In its broadest aspect, the present invention is directed to a detergent composition containing an effective amount of an enduring perfume composition as defined herein, together with a surfactant system which provides detergent benefits. Numerous perfume formulations suitable for use in the detergent of the invention can be prepared from known perfume or fragrance ingredients as disclosed hereinafter.

Brief Summary Text (14):

(B) from about 0.01% to about 95%, preferably from about 5% to about 85%, more preferably from about 3% to about 30%, and even more preferably from about 5% to about 22%, of a surfactant system.

Brief Summary Text (26):B. Detersive SurfactantsBrief Summary Text (27):

The detergent composition comprises from about 0.01% to about 95%, preferably from about 5% to about 85%, more preferably from about 3% to about 30%, and even more preferably from about 5% to about 22%, of a surfactant system. Detersive surfactants utilized can be of the anionic, nonionic, zwitterionic, ampholytic or cationic type or can comprise compatible mixtures of these types. Detergent surfactants useful herein are described in U.S. Pat. No. 3,664,961, Norris, issued May 23, 1972, U.S. Pat. No. 3,919,678, Laughlin et al., issued Dec. 30, 1975, U.S. Pat. No. 4,222,905, Cockrell, issued Sep. 16, 1980, and in U.S. Pat. No. 4,239,659, Murphy, issued Dec. 16, 1980. All of these patents are incorporated herein by reference.

Brief Summary Text (28):

Of the surfactants, anionics and nonionics are preferred and anionics are most preferred. Such preferred anionic surfactants can themselves be of several different types. For example, water-soluble salts of the higher fatty acids, i.e., "soaps", are useful anionic surfactants in the compositions herein. This includes alkali metal soaps such as the sodium, potassium, ammonium, and alkylolammonium salts of higher fatty acids containing from about 8 to about 24 carbon atoms, and preferably from about 12 to about 18 carbon atoms. Soaps can be made by direct saponification

of fats and oils or by the neutralization of free fatty acids. Particularly useful are the sodium and/or potassium salts of the mixtures of fatty acids derived from coconut oil and tallow, i.e., sodium and/or potassium tallow and/or coconut soap. If high sudsing is desired, the branched-chain C.sub.10 -C.sub.16 soaps can be used.

Brief Summary Text (29):

Additional anionic surfactants which suitable for use herein include the water-soluble salts, preferably the alkali metal, ammonium and/or alkylolammonium salts, of organic sulfuric reaction products having in their molecular structure an alkyl group containing from about 10 to about 20 carbon atoms and a sulfonic acid or sulfuric acid ester group. (Included in the term "alkyl" is the alkyl portion of acyl groups.) Examples of this group of synthetic surfactants are a) the sodium, potassium and/or ethanolamine alkyl sulfates, especially those obtained by sulfating the higher alcohols (C.sub.8 -C.sub.18 carbon atoms) such as those produced by reducing the glycerides of tallow or coconut oil, including primary, branched-chain, and/or random C.sub.10 -C.sub.20 alkyl sulfates ("AS") [Such alkyl sulfates include the C.sub.10 -C.sub.18 secondary (2,3) alkyl sulfates of the formula CH.sub.3 (CH.sub.2).sub.x (CHOSO<sub>3</sub>).sub.3.sup.- M.sup.+) CH.sub.3 and CH.sub.3 (CH.sub.2).sub.y (CHOSO<sub>3</sub>).sub.3.sup.- M.sup.+) CH.sub.2 CH.sub.3 where x and (y+1) are integers of at least about 7, preferably at least about 9, and M is a water-solubilizing cation and/or, especially, sodium; unsaturated sulfates such as oleyl sulfate]; b) the sodium, potassium and ethanolamine alkyl polyethoxylate sulfates, e.g., the C.sub.10 -C.sub.22 alkyl alkoxy sulfates ("AE.sub.x S") particularly those in which the alkyl group contains from 10 to 18, preferably from 12 to 18 carbon atoms, and wherein the polyethoxylate chain contains from 1 to 15, preferably 1 to 7 ethoxylate moieties; and c) the sodium and potassium alkylbenzene sulfonates in which the alkyl group contains from about 9 to about 18 carbon atoms, in straight chain or branched chain configuration, e.g., those of the type described in U.S. Pat. Nos. 2,220,099 and 2,477,383. Other nonlimiting examples of surfactants useful herein include C.sub.10 -C.sub.18 alkyl alkoxy carboxylates (especially the EO 1-5 ethoxycarboxylates), the C.sub.10-18 glycerol ethers, the C.sub.10 -C.sub.18 alkyl polyglycosides and their corresponding sulfated polyglycosides, and C.sub.12 -C.sub.18 alpha-sulfonated fatty acid esters. Especially valuable are linear straight chain alkylbenzene sulfonates in which the average number of carbon atoms in the alkyl group is from about 11 to 13, abbreviated as C.sub.11-13 LAS. The conventional nonionic surfactants such as the C.sub.12 -C.sub.18 alkyl ethoxylates ("AE") including the so-called narrow peaked alkyl ethoxylates and C.sub.6 -C.sub.12 alkyl phenol alkoxylates (especially ethoxylates and mixed ethoxalates/propoxalates), can be used. Preferred nonionic surfactants are those of the formula R.sup.1 (OC<sub>2</sub>H<sub>4</sub>).sub.n OH, wherein R.sup.1 is a C.sub.10 -C.sub.16 alkyl group or a C.sub.8 -C.sub.12 alkyl phenyl group, and n is from 3 to about 80. Particularly preferred are condensation products of C.sub.12 -C.sub.15 alcohols with from about 5 to about 20 moles of ethylene oxide per mole of alcohol, e.g., C.sub.12 -C.sub.13 alcohol condensed with about 6.5 moles of ethylene oxide per mole of alcohol. Additional suitable nonionic surfactants include polyhydroxy fatty acid amides of the formula ##STR1## wherein R is a C.sub.9-17 alkyl or alkenyl, R.sup.1 is a methyl group and Z is glyceryl derived from a reduced sugar or alkoxylated derivative thereof. Examples are N-methyl N-1-deoxyglucityl cocoamide, N-methyl N-1-deoxyglucityl oleamide, C.sub.10 -C.sub.18 N-(3-methoxypropyl) glucamide, and the C.sub.12 -C.sub.18 N-methylglucamides. See WO 9,206,154. The N-propyl through N-hexyl C.sub.12 -C.sub.18 glucamides can be used for low sudsing. Processes for making polyhydroxy fatty acid amides are known and can be found in Wilson, U.S. Pat. No. 2,965,576 and Schwartz, U.S. Pat. No. 2,703,798, the disclosures of which are incorporated herein by reference. Mixtures of anionic and nonionic surfactants are especially useful.

Brief Summary Text (30):

If desired, the conventional amphoteric surfactants such as the C.sub.12 -C.sub.18 betaines and sulfobetaines ("sultaines"), C.sub.10 -C.sub.18 amine oxides, and the like, can also be included in the overall compositions. Other conventional useful surfactants are listed in standard texts.

Brief Summary Text (71):

A preferred percarbonate bleach comprises dry particles having an average particle size in the range from about 500 micrometers to about 1,000 micrometers, not more than about 10% by weight of said particles being smaller than about 200 micrometers

and not more than about 10% by weight of said particles being larger than about 1,250 micrometers. Optionally, the percarbonate can be coated with silicate, borate or water-soluble surfactants. Percarbonate is available from various commercial sources such as FMC, Solvay and Tokai Denka.

Brief Summary Text (133):

The detergent compositions herein can also contain non-surfactant suds suppressors. These include, for example: high molecular weight hydrocarbons such as paraffin, fatty acid esters (e.g., fatty acid triglycerides), fatty acid esters of monoaliphatic alcohols, aliphatic C<sub>sub</sub>18 -C<sub>sub</sub>40 ketones (e.g., stearone), etc. Other suds inhibitors include N-alkylated amino triazines such as tri- to hexa-alkylmelamines or di- to tetra-alkyldiamine chlorotriazines formed as products of cyanuric chloride with two or three moles of a primary or secondary amine containing 1 to 24 carbon atoms, propylene oxide, and monostearyl phosphates such as monostearyl alcohol phosphate ester and monostearyl di-alkali metal (e.g., K, Na, and Li) phosphates and phosphate esters. The hydrocarbons such as paraffin and haloparaffin can be utilized in liquid form. The liquid hydrocarbons will be liquid at room temperature and atmospheric pressure, and will have a pour point in the range of about -40.degree. C. and about 50.degree. C., and a minimum boiling point not less than about 110.degree. C. (atmospheric pressure). It is also known to utilize waxy hydrocarbons, preferably having a melting point below about 100.degree. C. The hydrocarbons constitute a preferred category of suds suppressor for detergent compositions. Hydrocarbon suds suppressors are described, for example, in U.S. Pat. No. 4,265,779, issued May 5, 1981 to Gandolfo et al. The hydrocarbons, thus, include aliphatic, alicyclic, aromatic, and heterocyclic saturated or unsaturated hydrocarbons having from about 12 to about 70 carbon atoms. The term "paraffin," as used in this suds suppressor discussion, is intended to include mixtures of true paraffins and cyclic hydrocarbons.

Brief Summary Text (134):

Another preferred category of non-surfactant suds suppressors comprises silicone suds suppressors. This category includes the use of polyorganosiloxane oils, such as polydimethylsiloxane, dispersions or emulsions of polyorganosiloxane oils or resins, and combinations of polyorganosiloxane with silica particles wherein the polyorganosiloxane is chemisorbed or fused onto the silica. Silicone suds suppressors are well known in the art and are, for example, disclosed in U.S. Pat. No. 4,265,779, issued May 5, 1981 to Gandolfo et al and European Patent Application No. 89307851.9, published Feb. 7, 1990, by Starch, M. S.

Brief Summary Text (142):

To illustrate this point further, typical liquid laundry detergent compositions with controlled suds will optionally comprise from about 0.001 to about 1, preferably from about 0.01 to about 0.7, most preferably from about 0.05 to about 0.5, weight % of said silicone suds suppressor, which comprises (1) a nonaqueous emulsion of a primary antifoam agent which is a mixture of (a) a polyorganosiloxane, (b) a resinous siloxane or a silicone resin-producing silicone compound, (c) a finely divided filler material, and (d) a catalyst to promote the reaction of mixture components (a), (b) and (c), to form silanolates; (2) at least one nonionic silicone surfactant; and (3) polyethylene glycol or a copolymer of polyethylene-polypropylene glycol having a solubility in water at room temperature of more than about 2 weight %; and without polypropylene glycol. Similar amounts can be used in granular compositions, gels, etc. See also U.S. Pat. No. 4,978,471, Starch, issued Dec. 18, 1990, and U.S. Pat. No. 4,983,316, Starch, issued Jan. 8, 1991, U.S. Pat. No. 5,288,431, Huber et al., issued Feb. 22, 1994, and U.S. Pat. Nos. 4,639,489 and 4,749,740, Aizawa et al at column 1, line 46 through column 4, line 35.

Brief Summary Text (152):

A wide variety of other ingredients useful in detergent compositions can be included in the compositions herein, including other active ingredients, carriers, hydrotropes, processing aids, dyes or pigments, solvents for liquid formulations, solid fillers for bar compositions, etc. If high sudsing is desired, suds boosters such as the C<sub>sub</sub>10 -C<sub>sub</sub>16 alkanolamides can be incorporated into the compositions, typically at 1%-10% levels. The C<sub>sub</sub>10 -C<sub>sub</sub>14 monoethanol and diethanol amides illustrate a typical class of such suds boosters. Use of such suds boosters with high sudsing adjunct surfactants such as the amine oxides, betaines

and sultaines noted above is also advantageous. If desired, soluble magnesium salts such as MgCl<sub>2</sub>, MgSO<sub>4</sub>, and the like, can be added at levels of, typically, 0.1%-2%, to provide additional suds and to enhance grease removal performance.

**Brief Summary Text (153):**

Various detergents employed in the present compositions optionally can be further stabilized by absorbing said ingredients onto a porous hydrophobic substrate, then coating said substrate with a hydrophobic coating. Preferably, the detergent ingredient is admixed with a surfactant before being absorbed into the porous substrate. In use, the detergent ingredient is released from the substrate into the aqueous washing liquor, where it performs its intended detergent function.

Brief Summary Text (154):

To illustrate this technique in more detail, a porous hydrophobic silica (trademark SIPERNAT.RTM. D10, Degussa) is admixed with a proteolytic enzyme solution containing 3%-5% of C.sub.13-15 ethoxylated alcohol (EO 7) nonionic surfactant. Typically, the enzyme/surfactant solution is 2.5 times the weight of silica. The resulting powder is dispersed with stirring in silicone oil (various silicone oil viscosities in the range of 500-12,500 can be used). The resulting silicone oil dispersion is emulsified or otherwise added to the final detergent matrix. By this means, ingredients such as the aforementioned enzymes, bleaches, bleach activators, bleach catalysts, photo activators, dyes, fluorescers, fabric conditioners and hydrolyzable surfactants can be "protected" for use in detergents, including liquid laundry detergent compositions.

**Brief Summary Text (155):**

Liquid detergent compositions can contain water and other solvents as carriers. Low molecular weight primary or secondary alcohols exemplified by methanol, ethanol, propanol, and isopropanol are suitable. Monohydric alcohols are preferred for solubilizing surfactant, but polyols such as those containing from 2 to about 6 carbon atoms and from 2 to about 6 hydroxy groups (e.g., 1,3-propanediol, ethylene glycol, glycerine, and 1,2-propanediol) can also be used. The compositions can contain from 5% to 90%, typically 10% to 50% of such carriers.

#### Detailed Description Text (4):

The base formula illustrated herein can be made via a variety of known processes including conventional spray drying techniques or agglomeration in apparatus such as powder mixers and fluid beds commercially available from Lodge and Aeromatic, respectively. Agglomeration is especially suitable for preparing modern compact granular detergents and entails initially forming a surfactant paste using standard mixers, after which the paste is agglomerated into agglomerates and dried. Such processing techniques are well known in the art. The enzymes such as cellulase are dry mixed into the base formula and the perfumes used herein are subsequently sprayed onto the base formula so as to form the final granular detergent compositions exemplified herein.

#### Detailed Description Paragraph Table (3):

TABLE II										(% weight)	Component 4	5	6
18.0	18.0	18.0	N-Methyl	N-1-Deoxyglucityl	cocoamide	5.0	5.0	5.0	Nonionic.	sup.1	2.0		
2.0	2.0	Citric Acid	3.0	3.0	3.0	Oleic acid	2.0	2.0	Ethanol	3.2	3.2	3.2	Boric acid
3.5	3.5	3.5	Monoethanolamine	1.1	1.1	1.1	1,2 Propanediol	8.0	8.0	8.0	Sodium cumene sulfate	3.0	3.0
3.0	3.0	3.0	Sodium hydroxide	3.8	3.8	3.8	Polyacrylate	1.2	1.2	1.2	Protease.sup.2 (.0145 AU/g)	0.3	0.3
0.3	0.3	0.3	Lipase.sup.3 (200 LU/l)	0.3	0.3	0.3	Perfume A	0.3	--	--	Perfume B	--	0.3
Cellulase.sup.4 (7.5 CEVU)	0.3	0.3	0.3	45.0	45.0	45.0	100.0	100.0	100.0	.sup.1 Neodol 239 commercially available from Shell Oil Company .sup.2 Protease enzyme made by Genencor International, Inc. according to Caldwell et al, U.S. Pat. No. 5,185,258. .sup.3 LIPOLASE .RTM. commercially available from NOVO Industries A/S .sup.4 CAREZYME .RTM. commercially available from NOVO Industries A/S			

#### Detailed Description Paragraph Table (6):

TABLE V Liquid Detergent Compositions Wt. %  
 Component A B C.sub.14-15 Alkyl

polyethoxylate (2.25) sulfonic acid 23.00 12.50 C.sub.12-13 Linear alkyl benzene sulfonic acid -- 11.46 1,2 Propanediol 10.50 3.97 Monoethanolamine 12.50 3.65 C.sub.12-13 Alkyl polyethoxylate (6.5) 6.00 1.78 Ethanol 3.80 1.75 Polyhydroxy C.sub.12-14 fatty acid amide 9.00 -- C.sub.12-14 Coconut fatty acid 9.00 2.60 Citric acid 6.00 6.04 DTPA 0.95 -- Sodium formate 0.14 -- Boric acid 2.4 1.0 Tetraethylenepentaamine ethoxylate (15-18) 1.00 1.44 Soil release polymer 0.46 -- Enzymes (protease, lipase, cellulase) 2.55 2.27 Silicone antifoam composition 0.04 0.02 Poly(4-vinylpyridine)-N-oxide (PVNO) 0.10 0.10 Brightener - Tinopal UNPA-GX 0.20 0.20 Perfume A 0.1 -- Perfume B -- 0.14 Water and miscellaneous minors Balance to 100%

MICRO  
anionic  
Surfactants

## CLAIMS:

1. A detergent composition comprising:

(A) from about 0.001% to about 10% by weight of an enduring perfume composition said composition is selected from Perfume A which consists of benzyl salicylate, ethylene brassylate, Galoxide-50%, hexyl cinnamic aldehyde, and tetrahydro linalool or Perfume B which consists of benzyl acetate, benzyl salicylate, Coumarin, ethylene brassylate, Galoxide-50%, hexyl cinnamic aldehyde, lilial, methyl dihydro isojasmonate, gamma-n-Methyl ionone, patchouli alcohol, and tetrahydrolinalool;

(B) from about 0.01% to about 95% of a surfactant system.

4. The composition of claim 1 wherein the level of surfactant is from about 5% to about 85%.

7. The composition of claim 1 wherein the level of surfactant is from about 3% to about 30%.

8. The composition of claim 7 wherein the level of surfactant is from about 5% to about 22%.

12. The composition of claim 1 wherein said surfactant system comprises an anionic detergent surfactant.

13. The composition of claim 12 wherein said surfactant system comprises at least about 50% anionic detergent surfactant.

14. The composition of claim 1 wherein said surfactant system comprises: a mixture of anionic and nonionic detergent surfactants.

15. The composition of claim 14 the level of detergent surfactant is from about 1% to about 30%.

16. The composition of claim 15 wherein the level of said detergent surfactant is from about 12% to about 25% and said composition contains from about 0.05% to about 20% of surfactant that builds suds other than said detergent surfactant.

17. The detergent composition of claim 1 further comprising from about 1% to about 55% of a surfactant selected from the group consisting of: alkyl benzene sulfonates, alkyl ester sulfonates, alkyl ethoxylates, alkyl phenol alkoxylates, alkylpolyglucosides, alkyl sulfates, alkyl ethoxy sulfate, secondary alkyl sulfates and mixtures thereof.

**WEST** Generate Collection 

L19: Entry 24 of 27

File: USPT

Oct 3, 1995

DOCUMENT-IDENTIFIER: US 5454982 A

TITLE: Detergent composition containing polyhydroxy fatty acid amide and alkyl ester sulfonate surfactantsAbstract Text (1):

Disclosed is a detergent composition comprising at least about 1% by weight, preferably at least about 3%, of a polyhydroxy fatty acid amide surfactant of the formula: ##STR1## wherein R.<sup>1</sup> is H, C.<sub>2</sub>-C.<sub>4</sub> hydrocarbyl, 2-hydroxy ethyl, or 2-hydroxy propyl, R.<sup>2</sup> is C.<sub>2</sub>-C.<sub>11</sub> hydrocarbyl, and Z is polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain, or alkoxyated derivatives thereof; and at least about 1%, by weight, preferably at least about 3%, of an alkyl ester sulfonate surfactant of the formula: ##STR2## wherein R.<sup>3</sup> is C.<sub>2</sub>-C.<sub>20</sub> hydrocarbyl, R.<sup>4</sup> is C.<sub>2</sub>-C.<sub>6</sub> hydrocathyl, and M is a soluble salt-forming cation.

Brief Summary Text (2):

This invention pertains to detergent compositions containing alkyl ester sulfonate surfactant having improved performance through the use of polyhydroxy fatty acid amide surfactant.

Brief Summary Text (4):

The ability of detergent compositions to clean a large variety of soils and stains from the numerous types of fabrics present in the typical load of laundry, as well as cleaning of other surfaces (e.g., hard surfaces, hair, etc.) is of high importance in the evaluation of detergent performance. One type of surfactant which has been of value due to its good overall cleaning ability, particularly its excellent grease/oil cleaning performance over a wide temperature range (including relatively low temperatures) encompasses the linear alkylbenzene sulfonates ("LAS"). Whereas LAS-containing surfactant systems have performed admirably, it would be desirable to provide surfactant systems which could provide comparable levels of overall cleaning ability, including grease/oil cleaning, over a wide range of temperature and materials, wherein the major surfactant ingredients utilized could viably be derived primarily or even entirely from natural, renewable, non-petroleum resources. In particular, since a significant portion of LAS is typically petroleum-derived, it would be desirable to reduce or even eliminate the content of LAS while still maintaining excellent overall cleaning ability.

Brief Summary Text (5):

Conventional nonionic surfactants can provide generally acceptable cleaning, but typically require relatively long wash times, high wash temperatures, and high surfactant concentration to achieve effective grease/oil cleaning.

Brief Summary Text (6):

One type of surfactant that has been proposed and that can be derived largely or entirely from renewable, non-petroleum raw materials, encompasses the alkyl ester sulfonates, such as but not limited to methyl ester sulfonates. However, these surfactants do not by themselves offer the desired levels of overall cleaning performance, especially in the area of grease/oil cleaning. Furthermore, even upon combination of alkyl ester sulfonates with conventional co-surfactants such as alkyl ethoxylates, the desired levels of cleaning performance for a broad range of wash conditions are difficult to obtain.

Brief Summary Text (7):

It has now been found that improved detergents surfactant systems containing alkyl ester sulfonate can be obtained through the use of such alkyl ester sulfonates in combination with certain polyhydroxy fatty acid amide surfactants. Furthermore, the polyhydroxy fatty acid amides can be derived mainly or entirely from natural, renewable, non-petroleum raw materials.

Brief Summary Text (9):

A variety of polyhydroxy fatty acid amides have been described in the art. N-acyl, N-methyl glucamides, for example, are disclosed by J. W. Goodby, M. A. Marcus, E. Chin, and P. L. Finn in "The Thermotropic Liquid-Crystalline Properties of Some Straight Chain Carbohydrate Amphiphiles," *Liquid Crystals*, 1988, Volume 3, No. 11, pp 1569-1581, and by A. Muller-Fahrnow, V. Zabel, M. Steifa, and R. Hilgenfeld in "Molecular and Crystal Structure of a Nonionic Detergent:

"Nonanoyl-N-methylglucamide," *J. Chem. Soc. Chem. Commun.*, 1986, pp 1573-1574. The use of N-alkyl polyhydroxyamide surfactants has been of substantial interest recently for use in biochemistry, for example in the dissociation of biological membranes. See, for example, the journal article "N-D-Gluco-N-methyl-alkanamide Compounds, a New Class of Non-Ionic Detergents For Membrane Biochemistry," *Biochem. J.* (1982), Vol. 207, pp 363-366, by J. E. K. Hildreth.

Brief Summary Text (10):

The use of N-alkyl glucamides in detergent compositions has also been discussed. U.S. Pat. No. 2,965,576, issued Dec. 20, 1960 to E. R. Wilson, and G. B. Patent 809,060, published Feb. 18, 1959, assigned to Thomas Hedley & Co., Ltd. relate to detergent compositions containing anionic surfactants and certain amide surfactants, which can include N-methyl glucamide, added as a low temperature suds enhancing agent. These compounds include an N-acyl radical of a higher straight chain fatty acid having 10-14 carbon atoms. These compositions may also contain auxiliary materials such as alkali metal phosphates, alkali metal silicates, sulfates, and carbonates. It is also generally indicated that additional constituents to impart desirable properties to the composition can also be included in the compositions, such as fluorescent dyes, bleaching agents, perfumes, etc.

Brief Summary Text (12):

PCT International Application WO 83/04412, published Dec. 22, 1983, by J. Hildreth, relates to amphiphilic compounds containing polyhydroxyl aliphatic groups said to be useful for a variety of purposes including use as surfactants in cosmetics, drugs, shampoos, lotions, and eye ointments, as emulsifiers and dispensing agents for medicines, and in biochemistry for solubilizing membranes, whole cells, or other tissue samples, and for preparing of liposomes. Included in this disclosure are compounds of the formula R'CON(R)CH<sub>2</sub>.sub.2 R" and R"CON(R)R' wherein R is hydrogen or an organic grouping, R' is an aliphatic hydrocarbon group of at least three carbon atoms, and R" is the residue of an aldose.

Brief Summary Text (13):

European Patent 0 285 768, published Oct. 12, 1988, H. Kelkenberg, et al., relates to the use of N-polyhydroxy alkyl fatty acid amides as thickening agents in aqueous detergent systems. Included are amides of the formula R<sub>1</sub>.sub.1 C(O)N(X)R<sub>2</sub>.sub.2 wherein R<sub>1</sub>.sub.1 is a C<sub>1</sub>.sub.1 -C<sub>1</sub>.sub.17 (preferably C<sub>1</sub>.sub.7 -C<sub>1</sub>.sub.17) alkyl, R<sub>2</sub>.sub.2 is hydrogen, a C<sub>1</sub>.sub.1 -C<sub>1</sub>.sub.18 (preferably C<sub>1</sub>.sub.1 -C<sub>1</sub>.sub.6) alkyl, or an alkylene oxide, and X is a polyhydroxy alkyl having four to seven carbon atoms, e.g., N-methyl, coconut fatty acid glucamide. The thickening properties of the amides are indicated as being of particular use in liquid surfactant systems containing paraffin sulfonate, although the aqueous surfactant systems can contain other anionic surfactants, such as alkylarylsulfonates, olefin sulfonate, sulfosuccinic acid half ester salts, and fatty alcohol ether sulfonates, and nonionic surfactants such as fatty alcohol polyglycol ether, alkylphenol polyglycol ether, fatty acid polyglycol ester, polypropylene oxide-polyethylene oxide mixed polymers, etc. Paraffin sulfonate/N-methyl coconut fatty acid glucamide/nonionic surfactant shampoo formulations are exemplified. In addition to thickening attributes, the N-polyhydroxy alkyl fatty acid amides are said to have superior skin tolerance attributes.

Brief Summary Text (14):

U.S. Pat. No. 2,982,737, issued May 2, 1961, to Boettner, et al., relates to detergent bars containing urea, sodium lauryl sulfate anionic surfactant, and an N-alkylglucamide nonionic surfactant which is selected from N-methyl, N-sorbityl lauramide and N-methyl, N-sorbityl myristamide.

Brief Summary Text (15):

Other glucamide surfactants are disclosed, for example, in DT 2,226,872, published Dec. 20, 1973, H. W. Eckert, et al., which relates to washing compositions comprising one or more surfactants and builder salts selected from polymeric phosphates, sequestering agents, and washing alkalis, improved by the addition of an N-acylpolyhydroxy-alkyl-amine of the formula R.<sub>sub.1</sub>C(O)N(R.<sub>sub.2</sub>)CH.<sub>sub.2</sub>(CHOH).<sub>sub.n</sub>CH.<sub>sub.2</sub>OH, wherein R.<sub>sub.1</sub> is a C.<sub>sub.1</sub>-C.<sub>sub.3</sub> alkyl, R.<sub>sub.2</sub> is a C.<sub>sub.10</sub>-C.<sub>sub.22</sub> alkyl, and n is 3 or 4. The N-acylpolyhydroxyalkylamine is added as a soil suspending agent.

Brief Summary Text (16):

U.S. Pat. No. 3,654,166, issued Apr. 4, 1972, to H. W. Eckert, et al., relates to detergent compositions comprising at least one surfactant selected from the group of anionic, zwitterionic, and nonionic surfactants and, as a textile softener, an N-acyl, N-alkyl polyhydroxylalkyl compound of the formula R.<sub>sub.1</sub>N(Z)C(O)R.<sub>sub.2</sub> wherein R.<sub>sub.1</sub> is a C.<sub>sub.10</sub>-C.<sub>sub.22</sub> alkyl, R.<sub>sub.2</sub> is a C.<sub>sub.7</sub>-C.<sub>sub.21</sub> alkyl, R.<sub>sub.1</sub> and R.<sub>sub.2</sub> total from 23 to 39 carbon atoms, and Z is a polyhydroxylalkyl which can be --CH.<sub>sub.2</sub>(CHOH).<sub>sub.m</sub>CH.<sub>sub.2</sub>OH where m is 3 or 4.

Brief Summary Text (21):

U.S. Pat. No. 3,312,627, issued Apr. 4, 1967 to D. T. Hooker, discloses solid toilet bars that are substantially free of anionic detergents and alkaline builder materials, and which contain lithium soap of certain fatty acids, a nonionic surfactant selected from certain propylene oxide-ethylenediamine-ethylene oxide condensates, propylene oxide-propylene glycol-ethylene oxide condensates, and polymerized ethylene glycol, and also contain a nonionic lathering component which can include polyhydroxyamide of the formula RC(O)NR.<sub>sup.1</sub>(R.<sub>sup.2</sub>) wherein RC(O) contains from about 10 to about 14 carbon atoms, and R.<sub>sup.1</sub> and R.<sub>sup.2</sub> each are H or C.<sub>sub.1</sub>-C.<sub>sub.6</sub> alkyl groups, said alkyl groups containing a total number of carbon atoms of from 2 to about 7 and a total number of substituent hydroxyl groups of from 2 to about 6. A substantially similar disclosure is found in U.S. Pat. No. 3,312,626, also issued Apr. 4, 1967 to D. T. Hooker.

Brief Summary Text (24):

(a) at least about 1% by weight, preferably at least about 3%, of a polyhydroxy fatty acid amide surfactant of the formula: ##STR3## wherein R.<sub>sup.1</sub> is H, C.<sub>sub.1</sub>-C.<sub>sub.4</sub> hydrocarbyl, 2-hydroxy ethyl, or 2-hydroxy propyl, R.<sub>sup.2</sub> is C.<sub>sub.7</sub>-C.<sub>sub.31</sub> hydrocarbyl, and Z is polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain, or alkoxyated derivatives thereof; and

Brief Summary Text (25):

(b) at least about 1%, by weight, preferably at least about 3%, of an alkyl ester sulfonate surfactant of the formula: ##STR4## wherein R.<sub>sup.3</sub> is C.<sub>sub.8</sub>-C.<sub>sub.20</sub> hydrocarbyl, R.<sub>sup.4</sub> is C.<sub>sub.1</sub>-C.<sub>sub.6</sub> hydrocarbyl, and M is a soluble salt-forming cation.

Brief Summary Text (26):

Preferably, the composition is characterized by a polyhydroxy fatty acid amide:alkyl ester sulfonate weight ratio of from about 1:10 to about 10:1. More preferably, the ratio of the amide to alkyl ester sulfonate surfactant is from about 1:5 to about 5:1, most preferably about 1:3 to about 3:1.

Brief Summary Text (27):

This invention further provides a method for improving the performance of detergents containing anionic, nonionic, and/or cationic surfactants and alkyl ester sulfonate surfactants by incorporating into such composition the polyhydroxy fatty acid amide surfactant described above, such that the weight ratio of alkyl ester sulfonate surfactant to the amide surfactant is from about 1:10 to about 10:1, in the presence

'of water or water-miscible solvent (e.g., primary and secondary alcohols). Agitation is preferably provided to facilitate cleaning. Suitable means for providing agitation include washing by hand, with or without a cleaning device such as (but not limited to) a brush, sponge, cleaning cloth, paper towel, mop, etc., automatic laundry washing machine, automatic dishwashing machine, etc.

Brief Summary Text (28):

This invention further provides-a method for cleaning substrates, such as fibers, fabrics, hard surfaces, skin, etc., by contacting said substrate with a detergent composition comprising one or more anionic, nonionic, or cationic surfactants, at least about 1% alkyl ester sulfonate surfactant, and at least 1% of the polyhydroxy fatty acid amide, wherein preferably of the weight ratio of alkyl ester sulfonate surfactant:the amide surfactant is from about 1:10 to about 10:1.

Brief Summary Text (31):

Polyhydroxy Fatty Acid Amide Surfactant

Brief Summary Text (32):

The compositions hereof will comprise at least about 1%, typically from about 3% to about 50%, preferably from about 3% to about 30%, of the polyhydroxy fatty acid amide surfactant described below.

Brief Summary Text (33):

The polyhydroxy fatty acid amide surfactant component of the present invention comprises compounds of the structural formula: ##STR5## wherein: R.sup.1 is H, C.sub.1 -C.sub.4 hydrocarbyl, 2-hydroxy ethyl, 2-hydroxy propyl, or a mixture thereof, preferably C.sub.1 -C.sub.4 alkyl, more preferably C.sub.1 or C.sub.2 alkyl, most preferably C.sub.1 alkyl (i.e., methyl); and R.sup.2 is a C.sub.5 -C.sub.31 hydrocarbyl, preferably straight chain C.sub.7 -C.sub.19 alkyl or alkenyl, more preferably straight chain C.sub.9 -C.sub.17 alkyl or alkenyl, most preferably straight chain C.sub.11 -C.sub.17 alkyl or alkenyl, or mixtures thereof; and Z is a polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain, or an alkoxylated derivative (preferably ethoxylated or propoxylated) thereof. Z preferably will be derived from a reducing sugar in reductive amination reaction; more preferably Z is a glycityl. Suitable reducing sugars include glucose, fructose, maltose, lactose, galactose, mannose and xylose. As raw materials, high dextrose corn syrup, high fructose corn syrup, and high maltose corn syrup can be utilized as well as the individual sugars listed above. It should be understood that these corn syrups may yield a mix of sugar components for Z. Z preferably will be selected from the group consisting of --CH.sub.2 -(CHOH).sub.n --CH.sub.2 OH, --CH(CH.sub.2 OH)--(CHOH).sub.n-1 --CH.sub.2 OH, --CH.sub.2 -(CHOH).sub.2 --(CHOR')--(CHOH)--CH.sub.2 OH, and alkoxylated derivatives thereof, where n is an integer from 3 to 5, inclusive, and R' is H or a cyclic or aliphatic monosaccharide. Most preferred are glycityls wherein n is 4, particularly --CH.sub.2 -(CHOH).sub.4 --CH.sub.2 OH.

Brief Summary Text (38):

In one process for producing N-alkyl or N-hydroxyalkyl, N-deoxyglycityl fatty acid amides wherein the glycityl component is derived from glucose and the N-alkyl or N-hydroxyalkyl functionality is N-methyl, N-ethyl, N-propyl, N-butyl, N-hydroxyethyl, or N-hydroxypropyl, the product is made by reacting N-alkyl- or N-hydroxyalkyl-glucamine with a fatty ester selected from fatty methyl esters, fatty ethyl esters, and fatty triglycerides in the presence of a catalyst selected from the group consisting of trolithium phosphate, trisodium phosphate, tripotassium phosphate, tetrasodium pyrophosphate, pentapotassium tripolyphosphate, lithium hydroxide, sodium hydroxide, potassium hydroxide, calcium hydroxide, lithium carbonate, sodium carbonate, potassium carbonate, disodium tartrate, dipotassium tartrate, sodium potassium tartrate, trisodium citrate, tripotassium citrate, sodium basic silicates, potassium basic silicates, sodium basic aluminosilicates, and potassium basic aluminosilicates, and mixtures thereof. The amount of catalyst is preferably from about 0.5 mole % to about 50 mole %, more preferably from about 2.0 mole % to about 10 mole %, on an N-alkyl or N-hydroxyalkyl-glucamine molar basis. The reaction is preferably carried out at from about 138.degree. C. to about 170.degree. C. for typically from about 20 to about 90 minutes. When triglycerides are utilized as the fatty ester, the reaction is also preferably carried out using

from about 1 to about 10 weight % of a phase transfer agent, calculated on a weight percent basis of total reaction mixture, selected from saturated fatty alcohol polyethoxylates, alkylpolyglycosides, linear glycamide surfactant, and mixtures thereof.

Brief Summary Text (47):  
Alkyl Ester Sulfonate Surfactant

Brief Summary Text (48):

The detergent compositions hereof will comprise at least about 1% alkyl ester sulfonate surfactant, weight basis based upon the total detergent composition, and will preferably comprise at least about 3%, more preferably from about 3% to about 50%, most preferably from about 3% to about 30%.

Brief Summary Text (50):

Alkyl ester sulfonate surfactants are known to those in the art and are disclosed in the technical literature. For instance, linear esters of C.<sub>sub.8</sub> -C.<sub>sub.20</sub> carboxylic acids can be sulfonated with gaseous SO.<sub>sub.3</sub> according to "The Journal of the American Oil Chemists Society," 52 (1975), pp. 323-329. Suitable starting materials would include natural fatty substances as derived from tallow, palm, and coconut oils, etc.

Brief Summary Text (51):

The preferred alkyl ester sulfonate surfactant, especially for laundry applications, comprise alkyl ester sulfonate surfactants of the structural formula: ##STR6## wherein R.<sup>3</sup> is a C.<sub>sub.8</sub> -C.<sub>sub.20</sub> hydrocarbyl, preferably an alkyl, or combination thereof, R.<sup>4</sup> is a C.<sub>sub.1</sub> -C.<sub>sub.6</sub> hydrocarbyl, preferably an alkyl, or combination thereof, and M is a water soluble salt-forming cation. Suitable salts would include metal salts such as sodium, potassium, and lithium salts, and substituted or unsubstituted ammonium salts, such as methyl-, dimethyl-, trimethyl-, and quaternary ammonium cations, e.g. tetramethyl-ammonium and dimethyl piperdinium, and cations derived from alkanolamines, e.g. monoethanolamine, diethanolamine, and triethanolamine, and mixtures thereof. Preferably, R.<sup>3</sup> is C.<sub>sub.10</sub> -C.<sub>sub.16</sub> alkyl, and R.<sup>4</sup> is methyl, ethyl or isopropyl. Especially preferred are the methyl ester sulfonates wherein R.<sup>3</sup> is C.<sub>sub.14</sub> -C.<sub>sub.16</sub> alkyl.

Brief Summary Text (52):

Auxiliary Surfactants

Brief Summary Text (53):

In addition to the polyhydroxy fatty acid amide and alkyl ester sulfonate, the detergent compositions hereof can comprise auxiliary surfactants. These additional surfactants include, but are not limited to, other anionic and nonionic surfactants, cationic surfactants, amphoteric surfactants, and zwitterionic surfactants. Auxiliary surfactants can comprise from 0% to about 40%, typically less than about 30%, of the detergent composition, and when added for detergative purposes, will normally be present in amounts of at least about 3%, preferably at least about 5%, of the detergent.

Brief Summary Text (54):

Anionic Surfactants

Brief Summary Text (55):

Auxiliary anionic surfactants useful for detergative purposes can also be included in the compositions hereof. These can include salts (including, for example, sodium, potassium, ammonium, and substituted ammonium salts such as mono-, di- and triethanolamine salts) of soap, alkyl sulfates, alkyl alkoxylated sulfates including alkyl ethoxylated sulfates, C.<sub>sub.9</sub> -C.<sub>sub.20</sub> linear alkylbenzenesulphonates, C.<sub>sub.8</sub> -C.<sub>sub.22</sub> primary or secondary alkanesulphonates, C.<sub>sub.8</sub> -C.<sub>sub.24</sub> olefinsulphonates, sulphonated polycarboxylic acids prepared by sulphonation of the pyrolyzed product of alkaline earth metal citrates, e.g., as described in British patent specification No. 1,082,179, alkyl glycerol sulfonates, fatty acyl glycerol sulfonates, fatty oleyl glycerol sulfates, alkyl phenol ethylene oxide ether sulfates, paraffin sulfonates, alkyl phosphates, isethionates such as the acyl isethionates, N-acyl taurates, fatty acid amides of methyl tauride, alkyl

· succinamates and sulfosuccinates, monoesters of sulfosuccinate (especially saturated and unsaturated C.sub.12 -C.sub.18 monoesters), diesters of sulfosuccinate (especially saturated and unsaturated C.sub.6 -C.sub.14 diesters), N-acyl sarcosinates, sulfates of alkylpolysaccharides such as the sulfates of alkylpolyglucoside (the nonionic nonsulfated compounds being described below), branched primary alkyl sulfates, alkyl polyethoxy carboxylates such as those of the formula RO(CH.sub.2 CH.sub.2 O)<sub>k</sub>-CH.sub.2 COO-M.sup.+ wherein R is a C.sub.8 -C.sub.22 alkyl, k is an integer from 0 to 10, and M is a soluble salt-forming cation, and fatty acids esterified with isethionic acid and neutralized with sodium hydroxide. Resin acids and hydrogenated resin acids are also suitable, such as rosin, hydrogenated rosin, and resin acids and hydrogenated resin acids present in or derived from tall oil. Further examples are described in "Surface Active Agents and Detergents" (Vol. I and II by Schwartz, Perry and Berch). A variety of such surfactants are also generally disclosed in U.S. Pat. No. 3,929,678, issued Dec. 30, 1975 to Laughlin, et al. at Column 23, line 58 through Column 29, line 23 (herein incorporated by reference).

Brief Summary Text (56):

Suitable alkyl sulfate surfactants hereof include water soluble salts or acids of the formula ROSO.<sub>2</sub>M wherein R preferably is a C.sub.10 -C.sub.24 hydrocarbyl, preferably an alkyl or hydroxyalkyl having a C.sub.10 -C.sub.20 alkyl component, more preferably a C.sub.12 -C.sub.18 alkyl or hydroxyalkyl, and M is H or a cation, e.g., an alkali metal cation (e.g., sodium, potassium, lithium), substituted or unsubstituted ammonium cations such as methyl-, dimethyl-, and trimethyl ammonium, and quaternary ammonium cations, e.g., tetramethyl-ammonium and dimethyl piperidinium, and cations derived from alkanolamines such as ethanolamine, diethanolamine, triethanolamine, and mixtures thereof, and the like. Typically, alkyl chains of C.sub.12-16 are preferred for lower wash temperatures (e.g., below about 50.degree. C.) and C.sub.16-18 alkyl chains are preferred for higher wash temperatures (e.g., above about 50.degree. C.)

Brief Summary Text (57):

Suitable alkyl alkoxylated sulfate surfactants hereof include water soluble salts or acids of the formula RO(A).sub.m SO.<sub>2</sub>M wherein R is an unsubstituted C.sub.10 -C.sub.24 alkyl or hydroxyalkyl group having a C.sub.10 -C.sub.24 alkyl component, preferably a C.sub.12 -C.sub.20 alkyl or hydroxyalkyl, more preferably C.sub.12 -C.sub.18 alkyl or hydroxyalkyl, A is an ethoxy or propoxy unit, m is greater than zero, typically between about 0.5 and about 6, more preferably between about 0.5 and about 3, and M is H or a cation which can be, for example, a metal cation (e.g., sodium, potassium, lithium, calcium, magnesium, etc.), ammonium or substituted-ammonium cation. Alkyl ethoxylated sulfates as well as alkyl propoxylated sulfates are contemplated herein. Specific examples of substituted ammonium cations include methyl-, dimethyl-, trimethyl-ammonium, and quaternary ammonium cations, such as tetramethyl-ammonium, dimethyl piperidinium, and cations derived from alkanolamines, e.g. monoethanolamine, diethanolamine, and triethanolamine, and mixtures thereof. Exemplary surfactants are C.sub.12 -C.sub.18 alkyl polyethoxylate (1.0) sulfate, C.sub.12 -C.sub.18 alkyl polyethoxylate (2.25) sulfate, C.sub.12 -C.sub.18 alkyl polyethoxylate (3.0) sulfate, and C.sub.12 -C.sub.18 alkyl polyethoxylate (4.0) sulfate wherein M is conveniently selected from sodium and potassium.

Brief Summary Text (58):

Nonionic Detergent Surfactants

Brief Summary Text (59):

Suitable nonionic detergent surfactants are generally disclosed in U.S. Pat. No. 3,929,678, Laughlin et al., issued Dec. 30, 1975, at column 13, line 14 through column 16, line 6, incorporated herein by reference. Exemplary, non-limiting classes of useful nonionic surfactants are listed below.

Brief Summary Text (60):

1. The polyethylene, polypropylene, and polybutylene oxide condensates of alkyl phenols. In general, the polyethylene oxide condensates are preferred. These compounds include the condensation products of alkyl phenols having an alkyl group containing from about 6 to about 12 carbon atoms in either a straight chain or

'branched chain configuration with the alkylene oxide. In a preferred embodiment, the ethylene oxide is present in an amount equal to from about 5 to about 25 moles of ethylene oxide per mole of alkyl phenol. Commercially available nonionic surfactants of this type include Igepal.TM. CO-630, marketed by the GAF Corporation; and Triton.TM. X-45, X-114, X-100, and X-102, all marketed by the Rohm & Haas Company. These surfactants are commonly referred to as alkyl phenol alkoxylates, e.g., alkyl phenol ethoxylates.

Brief Summary Text (61):

2. The condensation products of aliphatic alcohols with from about 1 to about 25 moles of ethylene oxide. The alkyl chain of the aliphatic alcohol can either be straight or branched, primary or secondary, and generally contains from about 8 to about 22 carbon atoms. Particularly preferred are the condensation products of alcohols having an alkyl group containing from about 10 to about 20 carbon atoms with from about 2 to about 18 moles of ethylene oxide per mole of alcohol. Examples of commercially available nonionic surfactants of this type include Tergitol.TM. 15-S-9 (the condensation product of C.sub.11 -C.sub.15 linear secondary alcohol with 9 moles ethylene oxide), Tergitol.TM. 24-L-6 NMW (the condensation product of C.sub.12 -C.sub.14 primary alcohol with 6 moles ethylene oxide with a narrow molecular weight distribution), both marketed by Union Carbide Corporation; Neodol.TM. 45-9 (the condensation product of C.sub.14 -C.sub.15 linear alcohol with 9 moles of ethylene oxide), Neodol.TM. 23-6.5 (the condensation product of C.sub.12 -C.sub.13 linear alcohol with 6.5 moles of ethylene oxide), Neodol.TM. 45-7 (the condensation product of C.sub.14 -C.sub.15 linear alcohol with 7 moles of ethylene oxide), Neodol.TM. 45-4 (the condensation product of C.sub.14 -C.sub.15 linear alcohol with 4 moles of ethylene oxide), marketed by Shell Chemical Company, and Kyro.TM. EOB (the condensation product of C.sub.13 -C.sub.15 alcohol with 9 moles ethylene oxide), marketed by The Procter & Gamble Company. These are referred to commonly as alkyl ethoxylate surfactants.

Brief Summary Text (62):

3. The condensation products of ethylene oxide with a hydrophobic base formed by the condensation of propylene oxide with propylene glycol. The hydrophobic portion of these compounds preferably has a molecular weight of from about 1500 to about 1800 and exhibits water insolubility. The addition of polyoxyethylene moieties to this hydrophobic portion tends to increase the water solubility of the molecule as a whole, and the liquid character of the product is retained up to the point where the polyoxyethylene content is about 50% of the total weight of the condensation product, which corresponds to condensation with up to about 40 moles of ethylene oxide. Examples of compounds of this type include certain of the commercially-available Pluronic.TM. surfactants, marketed by BASF.

Brief Summary Text (63):

4. The condensation products of ethylene oxide with the product resulting from the reaction of propylene oxide and ethylenediamine. The hydrophobic moiety of these products consists of the reaction product of ethylenediamine and excess propylene oxide, and generally has a molecular weight of from about 2500 to about 3000. This hydrophobic moiety is condensed with ethylene oxide to the extent that the condensation product contains from about 40% to about 80% by weight of polyoxyethylene and has a molecular weight of from about 5,000 to about 11,000. Examples of this type of nonionic surfactant include certain of the commercially available Tetronic.TM. compounds, marketed by BASF.

Brief Summary Text (64):

5. Semi-polar nonionic surfactants are a special category of nonionic surfactants which include water-soluble amine oxides containing one alkyl moiety of from about 10 to about 18 carbon atoms and 2 moieties selected from the group consisting of alkyl groups and hydroxyalkyl groups containing from about 1 to about 3 carbon atoms; water-soluble phosphine oxides containing one alkyl moiety of from about 10 to about 18 carbon atoms and 2 moieties selected from the group consisting of alkyl groups and hydroxyalkyl groups containing from about 1 to about 3 carbon atoms; and water-soluble sulfoxides containing one alkyl moiety of from about 10 to about 18 carbon atoms and a moiety selected from the group consisting of alkyl and hydroxyalkyl moieties of from about 1 to about 3 carbon atoms.

Brief Summary Text (65):

Semi-polar nonionic detergent surfactants include the amine oxide surfactants having the formula ##STR7## wherein R.<sup>3</sup> is an alkyl, hydroxyalkyl, or alkyl phenyl group or mixtures thereof containing from about 8 to about 22 carbon atoms; R.<sup>4</sup> is an alkylene or hydroxyalkylene group containing from about 2 to about 3 carbon atoms or mixtures thereof; x is from 0 to about 3; and each R.<sup>5</sup> is an alkyl or hydroxyalkyl group containing from about 1 to about 3 carbon atoms or a polyethylene oxide group containing from about 1 to about 3 ethylene oxide groups. The R.<sup>5</sup> groups can be attached to each other, e.g., through an oxygen or nitrogen atom, to form a ring structure.

Brief Summary Text (66):

These amine oxide surfactants in particular include C.<sub>sub.10</sub>-C.<sub>sub.18</sub> alkyl dimethyl amine oxides and C.<sub>sub.8</sub>-C.<sub>sub.12</sub> alkoxy ethyl dihydroxy ethyl amine oxides.

Brief Summary Text (71):

7. Fatty acid amide surfactants having the formula: ##STR8## wherein R.<sup>6</sup> is an alkyl group containing from about 7 to about 21 (preferably from about 9 to about 17) carbon atoms and each R.<sup>7</sup> is selected from the group consisting of hydrogen, C.<sub>sub.1</sub>-C.<sub>sub.4</sub> alkyl, C.<sub>sub.1</sub>-C.<sub>sub.4</sub> hydroxyalkyl, and -(C.<sub>sub.2</sub>H.<sub>sub.4</sub>O).<sub>sub.x</sub>H where x varies from about 1 to about 3.

Brief Summary Text (73):Cationic SurfactantsBrief Summary Text (74):

Cationic detergents surfactants can also be included in detergent compositions of the present invention. Cationic surfactants include the ammonium surfactants such as alkyldimethyl-ammonium halogenides, and those surfactants having the formula:

Brief Summary Text (76):

Other cationic surfactants useful herein are also described in U.S. Pat. No. 4,228,044, Cambre, issued Oct. 14, 1980, incorporated herein by reference.

Brief Summary Text (77):Other SurfactantsBrief Summary Text (78):

Ampholytic surfactants can be incorporated into the detergent compositions hereof. These surfactants can be broadly described as aliphatic derivatives of secondary or tertiary amines, or aliphatic derivatives of heterocyclic secondary and tertiary amines in which the aliphatic radical can be straight chain or branched. One of the aliphatic substituents contains at least about 8 carbon atoms, typically from about 8 to about 18 carbon atoms, and at least one contains an anionic water-solubilizing group, e.g., carboxy, sulfonate, sulfate. See U.S. Pat. No. 3,929,678 to Laughlin et al., issued Dec. 30, 1975 at column 19, lines 18-35 (herein incorporated by reference) for examples of ampholytic surfactants.

Brief Summary Text (79):

Zwitterionic surfactants can also be incorporated into the detergent compositions hereof. These surfactants can be broadly described as derivatives of secondary and tertiary amines, derivatives of heterocyclic secondary and tertiary amines, or derivatives of quaternary ammonium, quaternary phosphonium or tertiary sulfonium compounds. See U.S. Pat. No. 3,929,678 to Laughlin et al., issued Dec. 30, 1975 at column 19, line 38 through column 22, line 48 (herein incorporated by reference) for examples of zwitterionic Surfactants.

Brief Summary Text (80):

Ampholytic and zwitterionic surfactants are generally used in combination with one or more anionic and/or nonionic surfactants.

Brief Summary Text (81):Tertiary Surfactant System

Brief Summary Text (82):

In a highly preferred detergent composition, alkyl ester sulfonate and polyhydroxy fatty acid amide surfactants are combined with an alkyl ethoxylate or alkyl polyglycoside (preferably an alkyl polyglucoside) nonionic auxiliary surfactant, or a mixture thereof. This combination can provide unexpectedly high levels of cleaning performance. In such preferred detergents, the alkyl ester sulfonate comprises at least about 40%, by weight, of the total amount of surfactant in the detergent composition, the level of polyhydroxy fatty acid amide is from about 1% to about 40%, preferably from about 3% to about 25%, and the polyhydroxy fatty acid amide to the preferred nonionic surfactants is from about 1:20 to about 20:1, preferably about 1:5 to about 10:1, more preferably from 1:1 to about 10:1.

Brief Summary Text (84):

In especially preferred embodiments, the anionic surfactant is a methyl ester sulfonate which comprises at least about 50% of the surfactant in the composition.

Brief Summary Text (85):

It should be understood that other tertiary surfactant systems are not meant to be excluded from the scope of the present invention.

Brief Summary Text (116):

Other suitable polycarboxylates are the polyacetal carboxylates disclosed in U.S. Pat. No. 4,144,226, Crutchfield et al., issued Mar. 13, 1979, incorporated herein by reference. These polyacetal carboxylates can be prepared by bringing together, under polymerization conditions, an ester of glyoxylic acid and a polymerization initiator. The resulting polyacetal carboxylate ester is then attached to chemically stable end groups to stabilize the polyacetal carboxylate against rapid depolymerization in alkaline solution, converted to the corresponding salt, and added to a surfactant.

Brief Summary Text (142):

Whereas it can be beneficial to utilize polymeric soil release agents in any of the detergent compositions hereof, especially those compositions utilized for laundry or other applications wherein removal of grease and oil from hydrophobic surfaces is needed, the presence of polyhydroxy fatty acid amide in detergent compositions also containing anionic surfactants can enhance performance of many of the more commonly utilized types of polymeric soil release agents. Anionic surfactants interfere with the ability of certain soil release agents to deposit upon and adhere to hydrophobic surfaces. These polymeric soil release agents have nonionic hydrophile segments or hydrophobe segments which are anionic surfactant-interactive.

Brief Summary Text (143):

The compositions hereof for which improved polymeric soil release agent performance can be obtained through the use of polyhydroxy fatty acid amide are those which contain an anionic surfactant system, an anionic surfactant-interactive soil release agent and a soil release agent-enhancing amount of the polyhydroxy fatty acid amide (PFA), wherein: (I) anionic surfactant-interaction between the soil release agent and the anionic surfactant system of the detergent composition can be shown by a comparison of the level of soil release agent (SRA) deposition on hydrophobic fibers (e.g., polyester) in aqueous solution between (A) a "Control" run wherein deposition of the SRA of the detergent composition in aqueous solution, in the absence of the other detergent ingredients, is measured, and (B) an "SRA/Anionic surfactant" test run wherein the same type and amount of the anionic surfactant system utilized in detergent composition is combined in aqueous solution with the SRA, at the same weight ratio of SRA to the anionic surfactant system of the detergent composition, whereby reduced deposition in (B) relative to (A) indicates anionic-surfactant interaction; and (II) whether the detergent composition contains a soil release agent-enhancing amount of polyhydroxy fatty acid amide can be determined by a comparison of the SRA deposition of the SRA/Anionic surfactant test run of (B) with soil release agent deposition in (C) an "SRA/Anionic surfactant/PFA test run" wherein the same type and level of polyhydroxy fatty acid amide of the detergent composition is combined with the soil release agent and anionic surfactant system corresponding to said SRA/Anionic surfactant test run, whereby improved deposition of the soil release agent in test run (C) relative to test run (B) indicates that a soil release agent-enhancing amount of polyhydroxy fatty acid amide is present. For

purposes hereof, the tests hereof should be conducted at anionic surfactant concentrations in the aqueous solution that are above the critical micelle concentration (CMC) of the anionic surfactant and preferably above about 100 ppm. The polymeric soil release agent concentration should be at least 15 ppm. A swatch of polyester fabric should be used for the hydrophobic fiber source. Identical swatches are immersed and agitated in 35.degree. C. aqueous solutions for the respective test runs for a period of 12 minutes, then removed, and analyzed. Polymeric soil release agent deposition level can be determined by radiotagging the soil release agent prior to treatment and subsequently conducting radiochemical analysis, according to techniques known in the art.

Brief Summary Text (144):

As an alternative to the radiochemical analytical methodology discussed above, soil release agent deposition can alternately be determined in the above test runs (i.e., test runs A, B, and C) by determination of ultraviolet light (UV) absorbance of the test solutions, according to techniques well known in the art. Decreased UV absorbance in the test solution after removal of the hydrophobic fiber material corresponds to increased SRA deposition. As will be understood by those skilled in the art, UV analysis should not be utilized for test solutions containing types and levels of materials which cause excessive UV absorbance interference, such as high levels of surfactants with aromatic groups (e.g., alkyl benzene sulfonates, etc.).

Brief Summary Text (145):

Thus by "soil release agent-enhancing amount" of polyhydroxy fatty acid amide is meant an amount of such surfactant that will enhance deposition of the soil release agent upon hydrophobic fibers, as described above, or an amount for which enhanced grease/oil cleaning performance can be obtained for fabrics washed in the detergent composition hereof in the next subsequent cleaning operation.

Brief Summary Text (146):

The amount of polyhydroxy fatty acid amide needed to enhance deposition will vary with the anionic surfactant selected, the amount of anionic surfactant, the particular soil release agent chosen, as well as the particular polyhydroxy fatty acid amide chosen. Generally, compositions will comprise from about 0.01% to about 10%, by weight, of the polymeric soil release agent, typically from about 0.1% to about 5%, and from about 4% to about 50%, more typically from about 5% to about 30% of anionic surfactant. Such compositions should generally contain at least about 1%, preferably at least about 3%, by weight, of the polyhydroxy fatty acid amide, though it is not intended to necessarily be limited thereto.

Brief Summary Text (147):

The polymeric soil release agents for which performance is enhanced by polyhydroxy fatty acid amide in the presence of anionic surfactant include those soil release agents having: (a) one or more nonionic hydrophile components consisting essentially of (i) polyoxyethylene segments with a degree of polymerization of at least 2, or (ii) oxypropylene or polyoxypropylene segments with a degree of polymerization of from 2 to 10, wherein said hydrophile segment does not encompass any oxypropylene unit unless it is bonded to adjacent moieties at each end by ether linkages, or (iii) a mixture of oxyalkylene units comprising oxyethylene and from 1 to about 30 oxypropylene units wherein said mixture contains a sufficient amount of oxyethylene units such that the hydrophile component has hydrophilicity great enough to increase the hydrophilicity of conventional polyester synthetic fiber surfaces upon deposit of the soil release agent on such surface, said hydrophile segments preferably comprising at least about 25% oxyethylene units and more preferably, especially for such components having about 20 to 30 oxypropylene units, at least about 50% oxyethylene units; or (b) one or more hydrophobe components comprising (i) C.sub.3 oxyalkylene terephthalate segments, wherein, if said hydrophobe components also comprise oxyethylene terephthalate, the ratio of oxyethylene terephthalate:C.sub.3 oxyalkylene terephthalate units is about 2:1 or lower, (ii) C.sub.4 -C.sub.6 alkylene or oxy C.sub.4 -C.sub.6 alkylene segments, or mixtures thereof, (iii) poly(vinyl ester) segments, preferably poly(vinyl acetate), having a degree of polymerization of at least 2, or (iv) C.sub.1 -C.sub.4 alkyl ether or C.sub.1 -C.sub.4 hydroxyalkyl ether substituents, or mixtures thereof, wherein said substituents are present in the form of C.sub.1 -C.sub.4 alkyl ether or C.sub.1 -C.sub.4 hydroxyalkyl ether cellulose derivatives, or mixtures thereof, and such cellulose derivatives are

· amphiphilic, whereby they have a sufficient level of C.sub.1 -C.sub.4 alkyl ether and/or C.sub.4 hydroxyalkyl ether units to deposit upon conventional polyester synthetic fiber surfaces and retain a sufficient level of hydroxyls, once adhered to such conventional synthetic fiber surface, to increase fiber surface hydrophilicity, or a combination of (a) and (b).

Brief Summary Text (157):

Additional polymeric soil release agents include the soil release agents of U.S. Pat. No. 4,877,896, issued Oct. 31, 1989 to Maldonado et al., which discloses anionic, especially sulfoaroyl, end-capped terephthalate esters, said patent being incorporated herein by reference. The terephthalate esters contain unsymmetrically substituted oxy-1,2-alkyleneoxy units. Included among the soil release polymers of U.S. Pat. No. 4,877,896 are materials with polyoxyethylene hydrophile components or C.sub.3 oxyalkylene terephthalate (propylene terephthalate) repeat units within the scope of the hydrophobe components of (b)(i) above. It is the polymeric soil release agents characterized by either, or both, of these criteria that particularly benefit from the inclusion of the polyhydroxy fatty acid amides hereof, in the presence of anionic surfactants.

Brief Summary Text (196):

Compounds known, or which become known, for reducing or suppressing the formation of suds can be incorporated into the compositions of the present invention. The incorporation of such materials, hereinafter "suds suppressors," can be desirable because the polyhydroxy fatty acid amide surfactants hereof can increase suds stability of the detergent compositions. Suds suppression can be of particular importance when the detergent compositions include a relatively high sudsing surfactant in combination with the polyhydroxy fatty acid amide surfactant. Suds suppression is particularly desirable for compositions intended for use in front loading automatic washing machines. These machines are typically characterized by having drums, for containing the laundry and wash water, which have a horizontal axis and rotary action about the axis. This type of agitation can result in high suds formation and, consequently, in reduced cleaning performance. The use of suds suppressors can also be of particular importance under hot water washing conditions and under high surfactant concentration conditions.

Brief Summary Text (198):

The detergent compositions may also contain non-surfactant suds suppressors. These include, for example, list: high molecular weight hydrocarbons such as paraffin, fatty acid esters (e.g., fatty acid triglycerides), fatty acid esters of monoaliphatic alcohols, aliphatic C.sub.18 -C.sub.40 ketones (e.g. stearone), etc. Other suds inhibitors include N-alkylated amino triazines such as tri- to hexa-alkylmelamines or di- to tetra-alkyldiamine chlorotriazines formed as products of cyanuric chloride with two or three moles of a primary or secondary amine containing 1 to 24 carbon atoms, propylene oxide, and monostearyl phosphates such as monostearyl alcohol phosphate ester and monostearyl di-alkali metal (e.g., Na, K, Li) phosphates and phosphate esters. The hydrocarbons such as paraffin and haloparaffin can be utilized in liquid form. The liquid hydrocarbons will be liquid at room temperature and atmospheric pressure, and will have a pour point in the range of about -40.degree. C. and about 5.degree. C., and a minimum boiling point not less than about 110.degree. C. (atmospheric pressure). It is also known to utilize waxy hydrocarbons, preferably having a melting point below about 100.degree. C. The hydrocarbons constitute a preferred category of suds suppressor for detergent compositions. Hydrocarbon suds suppressors are described, for example, in U.S. Pat. No. 4,265,779, issued May 5, 1981 to Gandolfo, et al., incorporated herein by reference. The hydrocarbons, thus, include aliphatic, alicyclic, aromatic, and heterocyclic saturated or unsaturated hydrocarbons having from about 12 to about 70 carbon atoms. The term "paraffin," as used in this suds suppressor discussion, is intended to include mixtures of true paraffins and cyclic hydrocarbons.

Brief Summary Text (199):

Another preferred category of non-surfactant suds comprises silicone suds suppressors. This category includes the use of polyorganosiloxane oils, such as polydimethylsiloxane, dispersions or emulsions of polyorganosiloxane oils or resins, and combinations of polyorganosiloxane with silica particles wherein the polyorganosiloxane is chemisorbed or fused onto the silica. Silicone suds

· suppressors are well known in the art and are, for example, disclosed in U.S. Pat. No. 4,265,779, issued May 5, 1981 to Gandolfo et al. and European Patent Application No. 89307851.9, published Feb. 7, 1990, by Starch, M. S., both incorporated herein by reference.

Brief Summary Text (206):

For any detergent compositions to be used in automatic laundry washing machines, suds should not form to the extent that they overflow the washing machine. Suds suppressors, when utilized, are preferably present in a "suds suppressing amount." By "suds suppressing amount" is meant that the formulator of the composition can select an amount of this suds controlling agent that will sufficiently control the suds to result in a low-sudsing laundry detergent for use in automatic laundry washing machines. The amount of suds control will vary with the detergent surfactants selected. For example, with high sudsing surfactants, relatively more of the suds controlling agent is used to achieve the desired suds control than with lesser foaming surfactants. In general, a sufficient amount of suds suppressor should be incorporated in low sudsing detergent compositions so that the suds that form during the wash cycle of the automatic washing machine (i.e., upon agitation of the detergent in aqueous solution under the intended wash temperature and concentration conditions) do not exceed about 75% of the void volume of washing machine's containment drum, preferably the suds do not exceed about 50% of said void volume, wherein the void volume is determined as the difference between total volume of the containment drum and the volume of the water plus the laundry.

Brief Summary Text (211):

Liquid detergent compositions can contain water and other solvents as carriers. Low molecular weight primary or secondary alcohols exemplified by methanol, ethanol, propanol, and isopropanol are suitable. Monohydric alcohols are preferred for solubilizing surfactant, but polyols such as those containing from 2 to about 6 carbon atoms and from 2 to about 6 hydroxy groups (e.g., propylene glycol, ethylene glycol, glycerine, and 1,2-propanediol) can also be used.

Brief Summary Text (213):

This invention further provides a method for improving the performance of detergents containing anionic, nonionic, and/or cationic surfactants and alkyl ester sulfonate surfactants by incorporating into such composition the polyhydroxy fatty acid amide surfactant described above, such that the weight ratio of alkyl ester sulfonate surfactant to the amide surfactant is from about 1:10 to about 10:1, in the presence of water or water-miscible solvent (e.g., primary and secondary alcohols). Agitation is preferably provided to facilitate cleaning. Suitable means for providing agitation include washing by hand, with or without a cleaning device such as (but not limited to) a brush, sponge, cleaning cloth, paper towel, mop, etc., automatic laundry washing machine, automaticice dishwashing machine, etc.

Brief Summary Text (214):

This invention further provides a method for cleaning substrates, such as fibers, fabrics, hard surfaces, skin, etc., by contacting said substrate .with a detergent composition comprising one or more anionic, nonionic, or cationic surfactants, at least about 1% alkyl ester sulfonate surfactant, and at least 1% of the polyhydroxy fatty acid amide, wherein preferably of the weight ratio of alkyl ester sulfonate surfactant:the amide surfactant is from about 1:10 to about 10:1.

Brief Summary Text (217):

This procedure exemplifies a process for making a N-methyl, 1-deoxyglucityl lauramide surfactant for use herein. Although a skilled chemist can vary apparatus configuration, one suitable apparatus for use herein comprises a three-liter four-necked flask fitted with a motor-driven paddle stirrer and a thermometer of length sufficient to contact the reaction medium. The other two necks of the flask are fitted with a nitrogen sweep and a wide-bore side-arm (caution: a wide-bore side-arm is important in case of very rapid methanol evolution) to which is connected an efficient collecting condenser and vacuum outlet. The latter is connected to a nitrogen bleed and vacuum gauge, then to an aspirator and a trap. A 500 watt heating mantle with a variable transformer temperature controller ("Variac") used to heat the reaction is so placed on a lab-jack that it may be readily raised or lowered to further control temperature of the reaction.

Detailed Description Text (3):

These examples show granular detergent compositions of the present invention containing alkyl ester sulfonate and polyhydroxy fatty acid amide surfactants.

Detailed Description Text (4):

The compositions of Examples 1-4 are preferably utilized at concentration levels of about 1350 ppm, wash water basis, at wash temperatures of less than about 50 C. These compositions can be made by spray drying a slurry of the ingredients of the base granule to a moisture of about 5-8%, admixing the granular enzyme and spraying on the liquid nonionic surfactant and perfume. Optionally, a portion or all of the surfactants in the base granule can be admixed as ground particles in the size range from 0.1 to 1 mm in diameter.

Detailed Description Text (12):

The polyhydroxy fatty acid amides derived from coconut alkyl fatty acids (predominantly C.sub.12 -C.sub.14) are more soluble than their tallow alkyl (predominantly C.sub.16 -C.sub.18) counterparts. Accordingly, the C.sub.12 -C.sub.14 materials are somewhat easier to formulate in liquid compositions, and are more soluble in cool-water laundering baths. However, the C.sub.16 -C.sub.18 materials are also quite useful, especially under circumstances where warm-to-hot wash water is used. Indeed, the C.sub.16 -C.sub.18 materials may be better detergents than their C.sub.12 -C.sub.14 counterparts. Accordingly, the formulator may wish to balance ease-of-manufacture vs. performance when selecting a particular polyhydroxy fatty acid amide for use in a given formulation.

Detailed Description Text (13):

It will also be appreciated that the solubility of the polyhydroxy fatty acid amides can be increased by having points of unsaturation and/or chain branching in the fatty acid moiety. Thus, materials such as the polyhydroxy fatty acid amides derived from oleic acid and iso-stearic acid are more soluble than their n-alkyl counterparts.

Detailed Description Text (14):

Likewise, the solubility of polyhydroxy fatty acid amides prepared from disaccharides, trisaccharides, etc., will ordinarily be greater than the solubility of their monosaccharide-derived counterpart materials. This higher solubility can be of particular assistance when formulating liquid compositions. Moreover, the polyhydroxy fatty acid amides wherein the polyhydroxy group is derived from maltose appear to function especially well as detergents when used in combination with conventional alkylbenzene sulfonate ("LAS") surfactants. While not intending to be limited by theory, it appears that the combination of LAS with the polyhydroxy fatty acid amides derived from the higher saccharides such as maltose causes a substantial and unexpected lowering of interfacial tension in aqueous media, thereby enhancing net detergency performance. (The manufacture of a polyhydroxy fatty acid amide derived from maltose is described hereinafter.)

Detailed Description Text (66):

Depending on the desires of the formulator, the compositions herein can contain more or less of various suds control agents. Typically, for dishwashing high sudsing is desirable so no suds control agent will be used. For fabric laundering in top-loading washing machines some control of suds may be desirable, and for front-loaders some considerable degree of suds control may be preferred. A wide variety of suds control agents are known in the art and can be routinely selected for use herein. Indeed, the selection of suds control agent, or mixtures of suds control agents, for any specific detergent composition will depend not only on the presence and amount of polyhydroxy fatty acid amide used therein, but also on the other surfactants present in the formulation. However, it appears that, for use with polyhydroxy fatty acid amides, silicone-based suds control agents of various types are more efficient (i.e., lower levels can be used) than various other types of suds control agents. The silicone suds control agents available as X2-3419 and Q2-3302 (Dow Corning) are particularly useful.

Detailed Description Text (73):

The following relates to the preparation of a preferred liquid heavy duty laundry

• detergent according to this invention. It will be appreciated that the stability of enzymes in such compositions is considerably less than in granular detergents. However, by using typical enzyme stabilizers such as formate and boric acid, lipase and cellulase enzymes can be protected from degradation by protease enzymes. However, lipase stability is still relatively poor in the presence of alkylbenzene sulfonate ("LAS") surfactants. Apparently, LAS partially denatures lipase, and, further, it seems that denatured lipase is more vulnerable to attack by protease.

Detailed Description Text (74):

In view of the foregoing considerations, which, as noted, can be particularly troublesome in liquid compositions, it is a challenge to provide liquid detergent compositions containing lipase, protease and cellulase enzymes, together. It is particularly challenging to provide such tertiary enzyme systems in stable liquid detergents together with an effective blend of deterutive surfactants. Additionally, it is difficult to incorporate peroxidase and/or amylase enzymes stably in such compositions.

Detailed Description Text (75):

It has now been determined that various mixtures of lipases, proteases, cellulases, amylases and peroxidases are adequately stable in the presence of certain non-alkylbenzene sulfonate surfactant systems, such that effective, heavy-duty solid and even liquid detergents can be formulated. Indeed, the formulation of stable, liquid, enzyme-containing detergent compositions constitutes a highly advantageous and preferred embodiment afforded by the technology of the present invention.

Detailed Description Text (76):

In particular, prior art liquid detergent compositions typically contain LAS or mixtures of LAS with surfactants of the RO(A).sub.m SO.sub.3 M type ("AES") noted hereinabove, i.e., LAS/AES mixtures. By contrast, the liquid detergents herein preferably comprise binary mixtures of the AES and polyhydroxy fatty acid amides of the type disclosed herein. While minimal amounts of LAS can be present, it will be appreciated that the stability of the enzymes will be lessened thereby. Accordingly, it is preferred that the liquid compositions be substantially free (i.e., contain less than about 10%, preferably less than about 5%, more preferably less than about 1%, most preferably 0%) of LAS.

Detailed Description Text (77):

The present invention provides a liquid detergent composition comprising the alkyl ester sulfonate surfactant and:

Detailed Description Text (78):

(a) from about 1% to about 50%, preferably from about 4% to about 40%, of a second anionic surfactant;

Detailed Description Text (82):

The second water-soluble anionic surfactant (a) herein preferably comprises ("AES"):

Detailed Description Text (84):

It is preferred that the ratio of the above surfactant ("AES") to the polyhydroxy fatty acid amide herein be from about 1:2 to about 8:1, preferably about 1:1 to about 5:1, most preferably about 1:1 to about 4:1.

Detailed Description Text (94):

In any of the foregoing examples, the fatty acid glucamide surfactant can be replaced by an equivalent amount of the maltamide surfactant, or mixtures of glucamide/maltamide surfactants derived from plant sugar sources. In the compositions the use of ethanolamides appears to help cold temperature stability of the finished formulations. Moreover, the use of sulfobetaine (aka "sultaine") and/or amine oxide surfactants provides superior sudsing. For compositions where especially high sudsing is desired (e.g., dishwashing), it is preferred that less than 5%, preferably less than 2%, most preferably, substantially no C.sub.14 or higher fatty acids be present, since these can suppress sudsing. Accordingly, the formulator of high sudsing compositions will desirably avoid the introduction of suds-suppressing amounts of such fatty acids into high sudsing compositions with the polyhydroxy

fatty acid amide, and/or avoid the formation of C.sub.14 and higher fatty acids on storage of the finished compositions. One simple means is to use C.sub.12 ester reactants to prepare the polyhydroxy fatty acid amides. Fortunately, the use of amine oxide or sulfobetaine surfactants can overcome some of the negative sudsing effects caused by the fatty acids.

Detailed Description Paragraph Table (6):

	EXAMPLE 12 Ingredients Wt. %
C14-15 alkyl polyethoxylate (2.25) sulfonic acid 19.50	C12-14 alkyl ester sulfonic acid, <u>methyl ester</u> 2.00
C12-14 fatty acid N-methyl glucamide.sup.1 6.50	Sodium tartrate mono- and di-succinate (80:20 mix)
Citric acid 3.80	4.00 Tetraethylene pentaamine ethoxylate (15-18)
C12-14 fatty acid 3.00	1.50 Ethoxylated copolymer of polyethylene 0.20 polypropylene terephthalate polysulfonic acid
Tetraethylene pentaamine ethoxylate (15-18) 1.50	Protease B (34 g/l).sup.2 0.68 <u>Lipase</u> (100 KLU/g).sup.3 0.47
Cellulase (5000 cevu/g).sup.4 0.14	Brightener 36.sup.5 0.15 Ethanol 5.20
Brightener 36.sup.5 0.15	Monoethanolamine 2.00 Sodium formate 0.32 1,2 propane diol 8.00 Sodium hydroxide 3.10 Silicone suds suppressor 0.0375 Boric acid 2.00 Water/misc. Balance to 100
Ethanol 5.20	.sup.1 Prepared as disclosed above. .sup.2

Protease B is a modified bacterial serine protease described in European Patent Application Serial No. 87 303761 filed April 28, 1987, particularly pages 17, 24 and 98. .sup.3 Lipase used herein is the lipase obtained by cloning the gene from Humicola lanuginosa and expressing the gene in Aspergillus oryzae, as described in European Patent Application 0 258 068, commercially available under the trade name LIPOLASE (ex Novo Nordisk A/S, Copenhagen Denmark). .sup.4 Cellulase used herein is sold under the trademark CAREZYME (Novo Nordisk, A/S, Copenhagen Denmark). .sup.5 Brightener 36 is commercially available as TINOPAL TAS 36. The brightener can be premixed with the monoethanolamine and water (4.5% brightener, 60% MEA, 35.5% H.sub.2 O) and added to the composition.

Other Reference Publication (1):

"New Surfactants Needed for New Century", Casey Croy, International News on Fats, Oils and Related Materials, vol. 6, No. 1, Jan. 1995, pp. 7-17.

Other Reference Publication (11):

H. Kelkenberg, Tenside Surfactants Detergents 25 (1988) pp. 78-13.

Other Reference Publication (12):

Synthesis of Long Chain N-Alkylactylamines from Unprotected Lactose-A new Series of Non-Ionic Surfactants, Latge et al, J. Dispersion Science and Technology, 12 (3&4), pp. 227-237 (1991).

**CLAIMS:**

1. A detergent composition free of phosphate builders which comprises:

(a) from about 3% to about 50% by weight of a polyhydroxy fatty acid amide surfactant of the formula: ##STR20## wherein R.sup.1 is C.sub.1 -C.sub.4 hydrocarbyl, 2-hydroxy ethyl, or 2-hydroxy propyl, R.sup.2 is C.sub.11 -C.sub.13 hydrocarbyl, and Z is polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to said chain; and

(b) from about 3% to about 50% by weight of an alkyl ester sulfonate surfactant of the formula: ##STR21## wherein R.sup.3 is C.sub.12 -C.sub.14 hydrocarbyl and R.sup.4 is C.sub.1 -C.sub.6 hydrocarbyl, and M is a soluble salt-forming cation;

wherein said composition is characterized by a polyhydroxy fatty acid amide:alkyl ester sulfonate weight ratio of from about 1.25:1 to about 1:1.25, said composition being substantially free from alkyl benzene sulfonate surfactants.

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DOCUMENT-IDENTIFIER: US 5223179 A

TITLE: Cleaning compositions with glycerol amides

Abstract Text (1):

Detergent compositions containing N-(1,2 propanediol) fatty acid amide surfactants of the general type RC(0)NR.<sup>1</sup> CH<sub>2</sub>CH<sub>2</sub>OH, especially where R.<sup>1</sup> is methyl or hydroxyethyl, are useful surfactants in laundry detergents, dishwashing liquids, shampoos, bar soaps, and hard surface cleaners. The amide surfactants provide good cleaning even in the absence of LAS surfactants.

Brief Summary Text (2):

The present invention relates to processes and compositions for cleaning fabrics, hard surfaces and the like using glycerol amides, a.k.a. N-(1,2-propanediol) fatty acid amides, as detersive surfactants.

Brief Summary Text (4):

A wide variety of detersive surfactants are known in the literature and in commercial practice. Such surfactants range from common soap to sophisticated betaine and sulfobetaine synthetic surfactants. In general, the continuing search for new detersive surfactants has been the result of the desires of the formulator to meet a growing list of cleaning needs under a wide variety of conditions. Thus, the formulator of laundry detergents must provide products which remove from fabrics a wide variety of soils and stains, ranging from petroleum oils and fatty oils to proteins, carbohydrates, clay and other particulate soils, and mixtures of such soils and stains. Moreover, users of laundry detergents often employ widely disparate laundering conditions, ranging from cold water washing to hot water washing. Since usage habits are becoming less and less uniform, formulators are also required to provide the consumer with products which function well with a wide variety of soils and under a wide variety of usage conditions.

Brief Summary Text (6):

Moreover, there is increasingly a perceived need to provide stable, effective detergent compositions which are formulated from renewable resources which do not rely on petrochemicals. In addition, there is a need to provide detergent formulations containing ingredients which perform well in combination with alkyl benzene sulfonate ("LAS") surfactants. Alternatively, the present invention provides high cleaning compositions which do not require the presence of LAS. This is particularly advantageous to formulators who wish to include detersive enzymes in their products, especially heavy duty liquid fabric laundering products, since LAS can degrade and deactivate such enzymes.

Brief Summary Text (7):

The present invention employs the fatty acid amides of glycerol amines to address the aforementioned issues. Such amides provide substantial cleaning advantages, especially when used in conjunction with other detersive surfactants. Furthermore, such amides mainly comprise fatty acid units and glycerol units which, themselves, are available from renewable resources such as plant and animal fats and oils. The amides herein also exhibit sudsing benefits which exceed those of comparable ethanolamides, and demonstrate distinct advantages in solubility and formulatability in "light-duty" liquid detergent compositions, such as hand dishwashing liquids.

Brief Summary Text (13):

(a) from about 1% to about 30% by weight of an N-(1,2-propanediol) fatty acid amide surfactant of the formula ##STR1## wherein R is a C.<sub>sub.7</sub>-C.<sub>sub.21</sub> hydrocarbyl species (especially coconut, tallow, palm fatty alkyl and oleyl) and R.<sub>sup.1</sub> is a C.<sub>sub.1</sub>-C.<sub>sub.6</sub> hydrocarbyl or substituted hydrocarbyl species, e.g., N-alkyl-N-(1,2-propanediol) fatty acid amides and N-hydroxyalkyl-N-(1,2-propanediol) fatty acid amides, especially N-methyl and N-hydroxyethyl;

Brief Summary Text (14):

(b) at least about 1% by weight of one or more non-amide detergents surfactants;

Brief Summary Text (19):

In preferred compositions herein the non-amide detergents surfactant is a member selected from the group consisting of alkyl benzene sulfonate ("LAS") surfactants, alkyl sulfate ("AS") surfactants, alkyl ether sulfate ("AES") surfactants, amine oxide surfactants, ethoxylated alcohol surfactants, ethoxylated alkyl phenol surfactants, alkyl polyglucoside surfactants, fatty acid amides of polyhydroxyamines having 3 or more hydroxyl groups on a single carbon chain attached to said amine, fatty acid soap, and mixtures thereof. Preferred ratios of said N-alkyl-N-(1,2-propanediol) fatty acid amide:anionic surfactant are in the range of 1:3 to 3:1, preferably 1:1, by weight.

Brief Summary Text (22):

(a) at least about 3% by weight of one or more anionic detergents surfactants;

Brief Summary Text (24):

(c) at least about 3% by weight of an N-(1,2-propanediol) fatty acid amide surfactant of the formula ##STR2## wherein R is a C.<sub>sub.7</sub>-C.<sub>sub.17</sub> hydrocarbyl species and R.<sub>sup.1</sub> is selected from methyl, hydroxyethyl and mixtures thereof; and (d) a liquid carrier. Such compositions can also, preferably, contain amine oxide, betaine and/or sultaine surfactants to boost suds and to enhance grease removal from tableware.

Detailed Description Text (4):

The amide surfactants used herein are then conveniently prepared by reacting the glycerol-amine prepared as noted above with a C.<sub>sub.8</sub>-C.<sub>sub.20</sub> fatty acid ester (e.g., methyl, ethyl, etc. ester) typically in the presence of an alkoxide catalyst and alcohol and/or 1,2-propanediol solvent, as illustrated by the following. ##STR4## wherein R is typically C.<sub>sub.7</sub>-C.<sub>sub.21</sub> alkyl or alkenyl and R.<sub>sup.1</sub> is typically C.<sub>sub.1</sub>-C.<sub>sub.6</sub> alkyl, hydroxyalkyl, or alkenyl, preferably methyl (--CH.<sub>sub.3</sub>) or hydroxyethyl (--CH.<sub>sub.2</sub>CH.<sub>sub.2</sub>OH). The examples hereinafter illustrate these reactions in greater detail.

Detailed Description Text (5):

Thus, the invention herein provides a novel and simple process for preparing the desired N-alkyl- or N-hydroxyalkyl-N-(1,2-propanediol) compounds by the reaction of glycitol with an N-alkylamine or N-hydroxyalkylamine, respectively, and the conversion thereof to the desired respective fatty acid amide surfactants by a reaction with a fatty acid ester.

Detailed Description Text (6):

In yet another mode, the preparation of the N-(1,2-propanediol) fatty acid amides can be conducted by reacting glyceraldehyde with an alkyl amine under hydrogen, with Ni catalyst, followed by reaction of the resulting N-alkyl-1,2-propanediol amine with a fatty ester in a solvent such as methanol or 1,2-propanediol solvent in the presence of a base catalyst such as sodium methoxide. A pressure reactor with a separate storage reservoir is typically employed. The reservoir (which can be pressurized) communicates with the reactor via suitable pipes, or the like. In use, a stirred slurry of a nickel catalyst (Raney Nickel 4200; Grace Chemicals) is first treated with hydrogen to remove traces of nickel oxides. This can be done in the reactor at about 50.degree. C., 1,000 psig hydrogen. (If the manufacturer has access to an oxide-free source of nickel catalyst, pretreatment with H.<sub>sub.2</sub> is unnecessary. However, for most manufacturing processes some trace of oxides will inevitably be present, so the H.<sub>sub.2</sub> treatment is preferred.) After removal of excess slurry medium (water) the N-alkyl amine is introduced into the reactor. Thereafter, the glyceraldehyde is introduced from the storage reservoir into the

reactor either under hydrogen pressure or by means of a high pressure pumping system, and the reaction is allowed to proceed at about 60.degree.-85.degree. C. and 2,000 psig hydrogen for about an hour. The progress of the reaction can be monitored by periodically removing samples of the reaction mixture and analyzing for reducibles using gas chromatography ("g.c."), or by heating the sample to about 100.degree. C. for 30-60 minutes in a sealed vial to check for color stability. Typically, for a reaction of about 8 liters (ca. 2 gallons) size the initial stage (to 95% of reducibles being depleted) requires about 60 minutes, depending somewhat on catalyst level and temperature. The temperature of the reaction mixture can then be raised to complete the reaction (to 99.9% of the reducibles being depleted). After removal of water, the N-alkyl-1,2 propanediol amine thus prepared is then admixed with a fatty acid methyl ester (e.g., coconutalkyl methyl ester) at a 1:1 mole ratio in 1,2-propanediol solvent and with sodium methoxide, and allowed to react for about 4 hours at 70.degree. C. to provide the amide surfactant.

Detailed Description Text (20):

Surfactants

Detailed Description Text (21):

Typically, the laundry and dishwashing compositions herein will comprise from about 3% to about 40% by weight of deterutive surfactants. One type of anionic surfactant which can be utilized encompasses alkyl ester sulfonates. The preferred alkyl ester sulfonate surfactant, especially for laundry applications, comprise alkyl ester sulfonate surfactants of the structural formula: ##STR5## wherein R.<sup>sup.3</sup> is a C.sub.8 -C.sub.20 hydrocarbyl, preferably an alkyl, or combination thereof, R.<sup>sup.4</sup> is a C.sub.1 -C.sub.6 hydrocarbyl, preferably an alkyl, or combination thereof, and M is a soluble salt-forming cation, such as sodium, potassium, and lithium salts, and substituted or unsubstituted ammonium salts, such as methyl-, dimethyl-, trimethyl-, and quaternary ammonium cations, e.g., tetramethylammonium and dimethyl piperdinium, and cations derived from alkanolamines, e.g., monoethanolamine, diethanolamine, and triethanolamine. Preferably, R.<sup>sup.3</sup> is C.sub.10 -C.sub.16 alkyl, and R.<sup>sup.4</sup> is methyl, ethyl or isopropyl. Especially preferred are the methyl ester sulfonates wherein R.<sup>sup.3</sup> is C.sub.14 -C.sub.16 alkyl.

Detailed Description Text (22):

Alkyl sulfate surfactants are another type of anionic surfactant for use herein. In addition to providing excellent overall cleaning ability when used in combination with the N-(1,2-propanediol) fatty acid amides, including good grease/oil cleaning over a wide range of temperatures, wash concentrations, and wash times, dissolution of alkyl sulfates can be obtained, as well as improved formulability in liquid detergent formulations are water soluble salts or acids of the formula RO<sub>2</sub>O.R<sup>sup.3</sup>M wherein R preferably is a C.sub.10 -C.sub.24 hydrocarbyl, preferably an alkyl or hydroxyalkyl having a C.sub.10 -C.sub.20 alkyl component, more preferably a C.sub.12 -C.sub.18 alkyl or hydroxyalkyl, and M is H or a cation, as noted above. Typically, alkyl chains of C.sub.12-16 are preferred for lower wash temperatures (e.g., below about 50.degree. C.) and C.sub.16-18 alkyl chains are preferred for higher wash temperatures (e.g., above about 50.degree. C.).

Detailed Description Text (23):

Alkyl alkoxylated (ether) sulfate ("AES") surfactants are another category of useful anionic surfactant. These surfactants are water soluble salts or acids typically of the formula RO(A).sub.m SO<sub>2</sub>.sub.3 M wherein R is an unsubstituted C.sub.10 -C.sub.24 alkyl component, preferably a C.sub.12 -C.sub.20 alkyl, more preferably C.sub.12 -C.sub.18 alkyl, A is an ethoxy or propoxy unit, m is greater than zero, typically between about 0.5 and about 6, more preferably between about 0.5 and about 3, and M is H or a cation which can be, for example, a metal cation (e.g., sodium, potassium, lithium, calcium, magnesium, etc.), ammonium or substituted-ammonium cation. Alkyl ethoxylated sulfates as well as alkyl propoxylated sulfates are contemplated herein. Specific examples of substituted ammonium cations include methyl-, dimethyl-, trimethyl-ammonium and quaternary ammonium cations, such as tetramethyl-ammonium, dimethyl piperdinium and cations derived from alkanolamines, e.g. monoethanolamine, diethanolamine, and triethanolamine, and mixtures thereof. Exemplary surfactants are C.sub.12 -C.sub.18 alkyl polyethoxylate (1.0) sulfate, C.sub.12 -C.sub.18 a alkyl polyethoxylate (2.25) sulfate, C.sub.12 - C.sub.18 alkyl polyethoxylate (3.0) sulfate, and C.sub.12 -C.sub.18 a alkyl polyethoxylate (4.0) sulfate wherein M is

conveniently selected from sodium and potassium.

Detailed Description Text (24):

Other anionic surfactants useful for detergative purposes can also be included in the compositions hereof. These can include salts (including, for example, sodium, potassium, ammonium, and substituted ammonium salts such as mono-, di- and triethanolamine salts) of soap, C.sub.9 -C.sub.20 linear alkylbenzenesulfonates, C.sub.8 -C.sub.22 primary or secondary alkanesulfonates, sulfonated polycarboxylic acids prepared by sulfonation of the pyrolyzed product of alkaline earth metal citrates, e.g., as described in British Patent Specification No. 1,082,179, alkyl glycerol sulfonates, fatty acyl glycerol sulfonates, fatty oleyl glycerol sulfates, alkyl phenol ethylene oxide ether sulfates, paraffin sulfonates, alkyl phosphates, isethionates such as the acyl isethionates, N-acyl taurates, fatty acid amides of methyl tauride, alkyl succinamates and sulfosuccinates, monoesters of sulfosuccinate (especially saturated and unsaturated C.sub.12 -C.sub.18 monoesters) diesters of sulfosuccinate (especially saturated and unsaturated C.sub.6 -C.sub.14 diesters), N-acyl sarcosinates, sulfates of alkylpolysaccharides such as the sulfates of alkylpolyglucoside (the nonionic nonsulfated compounds being described below), branched primary alkyl sulfates, alkyl polyethoxy carboxylates such as those of the formula RO(CH.sub.2 CH.sub.2 O).sub.k CH.sub.2 COO.sup.- M.sup.+ wherein R is a C.sub.8 -C.sub.22 alkyl, k is an integer from 0 to 10, and M is a soluble salt-forming cation, and fatty acids esterified with isethionic acid and neutralized with sodium hydroxide. Resin acids and hydrogenated resin acids are also suitable, such as rosin, hydrogenated rosin, and resin acids and hydrogenated resin acids present in or derived from tall oil. Further examples are described in "Surface Active Agents and Detergents" (Vol. I and II by Schwartz, Perry and Berch). A variety of such surfactants are also generally disclosed in U.S. Pat. No. 3,929,678, issued Dec. 30, 1975 to Laughlin et al, at Column 23, line 58 through Column 29, line 23.

Detailed Description Text (25):

Nonionic Detergent Surfactants

Detailed Description Text (26):

Suitable nonionic detergent surfactants are generally disclosed in U.S. Pat. No. 3,929,678, Laughlin et al, issued Dec. 30, 1975, at column 13, line 14 through column 16, line 6. Exemplary, non-limiting classes of useful nonionic surfactants are listed below.

Detailed Description Text (27):

1. The polyethylene, polypropylene, and polybutylene oxide condensates of alkyl phenols. In general, the polyethylene oxide condensates are preferred. These compounds include the condensation products of alkyl phenols having an alkyl group containing from about 6 to about 12 carbon atoms in either a straight chain or branched chain configuration with the alkylene oxide. In a preferred embodiment, the ethylene oxide is present in an amount equal to from about 5 to about 25 moles of ethylene oxide per mole of alkyl phenol. Commercially available nonionic surfactants of this type include IGEPAL CO-630, marketed by the GAF Corporation; and TRITON X-45, X-114, X-100, and X-102, all marketed by the Rohm & Haas Company. These compounds are commonly referred to as alkyl phenol alkoxylates, (e.g., alkyl phenol ethoxylates).

Detailed Description Text (28):

2. The condensation products of aliphatic alcohols with from about 1 to about 25 moles of ethylene oxide. The alkyl chain of the aliphatic alcohol can either be straight or branched, primary or secondary, and generally contains from about 8 to about 22 carbon atoms. Particularly preferred are the condensation products of alcohols having an alkyl group containing from about 10 to about 20 carbon atoms with from about 2 to about 18 moles of ethylene oxide per mole of alcohol. Examples of commercially available nonionic surfactants of this type include TERGITOL 15-S-9 (the condensation product of C.sub.11 -C.sub.15 linear secondary alcohol with 9 moles ethylene oxide), TERGITOL 24-L-6 NMW (the condensation product of C.sub.12 -C.sub.14 primary alcohol with 6 moles ethylene oxide with a narrow molecular weight distribution), both marketed by Union Carbide Corporation; NEOFOL 45-9 (the condensation product of C.sub.14 -C.sub.15 linear alcohol with 9 moles of ethylene

oxide), NEODOL 23-6.5 (the condensation product of C.<sub>sub.12</sub> -C.<sub>sub.13</sub> linear alcohol with 6.5 moles of ethylene oxide), NEODOL 45-7 (the condensation product of C.<sub>sub.14</sub> -C.<sub>sub.15</sub> linear alcohol with 7 moles of ethylene oxide), NEODOL 45-4 (the condensation product of C.<sub>sub.14</sub> -C.<sub>sub.15</sub> linear alcohol with 4 moles of ethylene oxide), marketed by Shell Chemical Company, and KYRO EOB (the condensation product of C.<sub>sub.13</sub> -C.<sub>sub.15</sub> alcohol with 9 moles ethylene oxide), marketed by The Procter & Gamble Company. This category of nonionic surfactant is referred to generally as "alkyl ethoxylates."

Detailed Description Text (29):

3. The condensation products of ethylene oxide with a hydrophobic base formed by the condensation of propylene oxide with propylene glycol. The hydrophobic portion of these compounds preferably has a molecular weight of from about 1500 to about 1800 and exhibits water insolubility. The addition of polyoxyethylene moieties to this hydrophobic portion tends to increase the water solubility of the molecule as a whole, and the liquid character of the product is retained up to the point where the polyoxyethylene content is about 50% of the total weight of the condensation product, which corresponds to condensation with up to about 40 moles of ethylene oxide. Examples of compounds of this type include certain of the commercially-available PLURONIC surfactants, marketed by BASF.

Detailed Description Text (30):

4. The condensation products of ethylene oxide with the product resulting from the reaction of propylene oxide and ethylenediamine. The hydrophobic moiety of these products consists of the reaction product of ethylenediamine and excess propylene oxide, and generally has a molecular weight of from about 2500 to about 3000. This hydrophobic moiety is condensed with ethylene oxide to the extent that the condensation product contains from about 40% to about 80% by weight of polyoxyethylene and has a molecular weight of from about 5,000 to about 11,000. Examples of this type of nonionic surfactant include certain of the commercially available TETRONIC compounds, marketed by BASF.

Detailed Description Text (31):

5. Semi-polar nonionic surfactants are a special category of nonionic surfactants which include water-soluble amine oxides containing one alkyl moiety of from about 10 to about 18 carbon atoms and 2 moieties selected from the group consisting of alkyl groups and hydroxyalkyl groups containing from about 1 to about 3 carbon atoms; water-soluble phosphine oxides containing one alkyl moiety of from about 10 to about 18 carbon atoms and 2 moieties selected from the group consisting of alkyl groups and hydroxyalkyl groups containing from about 1 to about 3 carbon atoms; and water-soluble sulfoxides containing one alkyl moiety of from about 10 to about 18 carbon atoms and a moiety selected from the group consisting of alkyl and hydroxyalkyl moieties of from about 1 to about 3 carbon atoms.

Detailed Description Text (32):

Semi-polar nonionic detergent surfactants include the amine oxide surfactants having the formula ##STR6## wherein R.<sup>3</sup> is an alkyl, hydroxyalkyl, or alkyl phenyl group or mixtures thereof containing from about 8 to about 22 carbon atoms; R.<sup>4</sup> is an alkylene or hydroxyalkylene group containing from about 2 to about 3 carbon atoms or mixtures thereof; x is from 0 to about 3; and each R.<sup>5</sup> is an alkyl or hydroxyalkyl group containing from about 1 to about 3 carbon atoms or a polyethylene oxide group containing from about 1 to about 3 ethylene oxide groups. The R.<sup>5</sup> groups can be attached to each other, e.g., through an oxygen or nitrogen atom, to form a ring structure.

Detailed Description Text (33):

These amine oxide surfactants in particular include C.<sub>sub.10</sub> -C.<sub>sub.18</sub> alkyl dimethyl amine oxides and C.<sub>sub.8</sub> -C.<sub>sub.12</sub> alkoxy ethyl dihydroxy ethyl amine oxides.

Detailed Description Text (38):

7. Fatty acid amide surfactants having the formula: ##STR7## wherein R.<sup>6</sup> is an alkyl group containing from about 7 to about 21 (preferably from about 9 to about 17) carbon atoms and each R.<sup>7</sup> is selected from the group consisting of hydrogen, C.<sub>sub.1</sub> -C.<sub>sub.4</sub> alkyl, C.<sub>sub.1</sub> -C.<sub>sub.4</sub> hydroxyalkyl, and -(C.<sub>sub.2</sub> H.<sub>sub.4</sub>)<sub>2</sub>

0).sub.x H where x varies from about 1 to about 3.

Detailed Description Text (40):

Cationic Surfactants

Detailed Description Text (41):

Cationic detergents surfactants can also be included in detergent compositions of the present invention. Cationic surfactants include the ammonium surfactants such as alkyldimethylammonium halogenides, and those surfactants having the formula:

Detailed Description Text (44):

Other cationic surfactants useful herein are also described in U.S. Pat. No. 4,228,044, Cambre, issued Oct. 14, 1980, incorporated herein by reference.

Detailed Description Text (45):

Other Surfactants

Detailed Description Text (46):

Ampholytic surfactants can be incorporated into the detergent compositions hereof. These surfactants can be broadly described as aliphatic derivatives of secondary or tertiary amines, or aliphatic derivatives of heterocyclic secondary and tertiary amines in which the aliphatic radical can be straight chain or branched. One of the aliphatic substituents contains at least about 8 carbon atoms, typically from about 8 to about 18 carbon atoms, and at least one contains an anionic water-solubilizing group, e.g., carboxy, sulfonate, sulfate. See U.S. Pat. No. 3,929,678 to Laughlin et al, issued Dec. 30, 1975 at column 19, lines 18-35 (herein incorporated by reference) for examples of ampholytic surfactants.

Detailed Description Text (47):

Zwitterionic surfactants can also be incorporated into the detergent compositions hereof. These surfactants can be broadly described as derivatives of secondary and tertiary amines, derivatives of heterocyclic secondary and tertiary amines, or derivatives of quaternary ammonium, quaternary phosphonium or tertiary sulfonium compounds. See U.S. Pat. No. 3,929,678 to Laughlin et al, issued Dec. 30, 1975 at column 19, line 38 through column 22, line 48 (herein incorporated by reference) for examples of zwitterionic surfactants.

Detailed Description Text (48):

Ampholytic and zwitterionic surfactants are generally used in combination with one or more anionic and/or nonionic surfactants.

Detailed Description Text (49):

In addition to enzymes, the N-(1,2-propanediol) fatty acid amide, and any optional detergents surfactants, the detergents hereof can include one or more other detergent adjunct materials or other materials for assisting in or enhancing cleaning performance, treatment of the substrate to be cleaned, or modify the aesthetics of the detergent composite or modify the (e.g., perfumes, colorants, dyes, etc.).

Detailed Description Text (81):

Other suitable polycarboxylates are the polyacetal carboxylates disclosed in U.S. Pat. No. 4,144,226, Crutchfield et al, issued Mar. 13, 1979, incorporated herein by reference. These polyacetal carboxylates can be prepared by bringing together, under polymerization conditions, an ester of glyoxylic acid and a polymerization initiator. The resulting polyacetal carboxylate ester is then attached to chemically stable end groups to stabilize the polyacetal carboxylate against rapid depolymerization in alkaline solution, converted to the corresponding salt, and added to a surfactant.

Detailed Description Text (86):

The bleaching agents used herein can be any of the bleaching agents useful for detergent compositions in textile cleaning, hard surface cleaning, or other cleaning purposes that are now known or become known. These include oxygen bleaches as well as other bleaching agents. In contrast with certain polyol surfactants, the N-(1,2-propanediol) fatty acid amide surfactants herein are compatible with perborate bleach, such as sodium perborate tetrahydrate and sodium perborate

monohydrate.

Detailed Description Text (95):

Whereas it can be beneficial to utilize polymeric soil release agents in any of the detergent compositions hereof, especially those compositions utilized for laundry or other applications wherein removal of grease and oil from hydrophobic surfaces is needed, the presence of N-(1,2-propanediol) fatty acid amide in detergent compositions also containing anionic surfactants can enhance performance of many of the more commonly utilized types of polymeric soil release agents. Anionic surfactants interfere with the ability of certain soil release agents to deposit upon and adhere to hydrophobic surfaces. These polymeric soil release agents have nonionic hydrophile segments or hydrophobe segments which are anionic surfactant-interactive.

Detailed Description Text (96):

The compositions hereof for which improved polymeric soil release agent performance can be obtained through the use of N-(1,2-propanediol) fatty acid amide are those which contain an anionic surfactant system, an anionic surfactant-interactive soil release agent and a soil release agent-enhancing amount of the N-(1,2-propanediol) fatty acid amide, wherein: (I) anionic surfactant-interaction between the soil release agent and the anionic surfactant system of the detergent composition can be shown by a comparison of the level of soil release agent (SRA) deposition on hydrophobic fibers (e.g., polyester) in aqueous solution between (A) a "Control" run wherein deposition of the SRA of the detergent composition in aqueous solution, in the absence of the other detergent ingredients, is measured, and (B) an "SRA/Anionic surfactant" test run wherein the same type and amount of the anionic surfactant system utilized in detergent composition is combined in aqueous solution with the SRA, at the same weight ratio of SRA to the anionic surfactant system of the detergent composition, whereby reduced deposition in (B) relative to (A) indicates anionic-surfactant interaction; and (II) whether the detergent composition contains a soil release agent-enhancing amount of N-(1,2-propanediol) fatty acid amide can be determined by a comparison of the SRA deposition of the SRA/Anionic surfactant test run of (B) with soil release agent deposition in (C) an "SRA/Anionic surfactant/PFA test run" wherein the same type and level of N-(1,2-propanediol) fatty acid amide of the detergent composition is combined with the soil release agent and anionic surfactant system corresponding to said SRA/anionic surfactant test run, whereby improved deposition of the soil release agent in test run (C) relative to test run (B) indicates that a soil release agent-enhancing amount of N-(1,2-propanediol) fatty acid amide is present. For purposes hereof, the tests hereof should be conducted at anionic surfactant concentrations in the aqueous solution that are above the critical micelle concentration (CMC) of the anionic surfactant and preferably above about 100 ppm. The polymeric soil release agent concentration should be at least 15 ppm. A swatch of polyester fabric should be used for the hydrophobic fiber source. Identical swatches are immersed and agitated in 35.degree. C. aqueous solutions for the respective test runs for a period of 12 minutes, then removed, and analyzed. Polymeric soil release agent deposition level can be determined by radiotagging the soil release agent prior to treatment and subsequently conducting radiochemical analysis, according to techniques known in the art.

Detailed Description Text (97):

As an alternative to the radiochemical analytical methodology discussed above, soil release agent deposition can alternately be determined in the above test runs (i.e., test runs A, B, and C) by determination of ultraviolet light (UV) absorbance of the test solutions, according to techniques well known in the art. Decreased UV absorbance in the test solution after removal of the hydrophobic fiber material corresponds to increased SRA deposition. As will be understood by those skilled in the art, UV analysis should not be utilized for test solutions containing types and levels of materials which cause excessive UV absorbance interference, such as high levels of surfactants with aromatic groups (e.g., alkyl benzene sulfonates, etc.).

Detailed Description Text (98):

Thus by "soil release agent-enhancing amount" of N-(1,2-propanediol) fatty acid amide is meant an amount of such surfactant that will enhance deposition of the soil release agent upon hydrophobic fibers, as described above, or an amount for which

enhanced grease/oil cleaning performance can be obtained for fabrics washed in the detergent composition hereof in the next subsequent cleaning operation.

Detailed Description Text (99):

The amount of N-(1,2-propanediol) fatty acid amide needed to enhance deposition will vary with the anionic surfactant selected, the amount of anionic surfactant, the particular soil release agent chosen, as well as the particular N-(1,2-propanediol) fatty acid amide chosen. Generally, compositions will comprise from about 0.01% to about 10%, by weight, of the polymeric soil release agent, typically from about 0.1% to about 5%, and from about 4% to about 50%, more typically from about 5% to about 30% of anionic surfactant. Such compositions should generally contain at least about 1%, preferably at least about 3%, by weight, of the N-(1,2-propanediol) fatty acid amide, though it is not intended to necessarily be limited thereto.

Detailed Description Text (100):

The polymeric soil release agents for which performance is enhanced by N-(1,2-propanediol) fatty acid amide in the presence of anionic surfactant include those soil release agents having: (a) one or more nonionic hydrophile components consisting essentially of (i) polyoxyethylene segments with a degree of polymerization of at least 2, or (ii) oxypropylene or polyoxypropylene segments with a degree of polymerization of from 2 to 10, wherein said hydrophile segment does not encompass any oxypropylene unit unless it is bonded to adjacent moieties at each end by ether linkages, or (iii) a mixture of oxyalkylene units comprising oxyethylene and from 1 to about 30 oxypropylene units wherein said mixture contains a sufficient amount of oxyethylene units such that the hydrophile component has hydrophilicity great enough to increase the hydrophilicity of conventional polyester synthetic fiber surfaces upon deposit of the soil release agent on such surface, said hydrophile segments preferably comprising at least about 25% oxyethylene units and more preferably, especially for such components having about 20 to 30 oxypropylene units, at least about 50% oxyethylene units; or (b) one or more hydrophobe components comprising (i) C.sub.3 oxyalkylene terephthalate segments, wherein, if said hydrophobe components also comprise oxyethylene terephthalate, the ratio of oxyethylene terephthalate:C.sub.3 oxyalkylene terephthalate units is about 2:1 or lower (ii) C.sub.4 -C.sub.6 alkylene or oxy C.sub.4 -C.sub.6 alkylene segments or mixtures thereof, (iii) poly (vinyl ester) segments, preferably poly(vinyl acetate), having a degree of polymerization of at least 2, or (iv) C.sub.1 -C.sub.4 alkyl ether or C.sub.4 hydroxyalkyl ether substituents, or mixtures thereof, wherein said substituents are present in the form of C.sub.1 -C.sub.4 alkyl ether or C.sub.4 hydroxyalkyl ether cellulose derivatives, or mixtures thereof, and such cellulose derivatives are amphiphilic, whereby they have a sufficient level of C.sub.1 -C.sub.4 alkyl ether and/or C.sub.4 hydroxyalkyl ether units to deposit upon conventional polyester synthetic fiber surfaces and retain a sufficient level of hydroxyls, once adhered to such conventional synthetic fiber surface, to increase fiber surface hydrophilicity, or a combination of (a) and (b).

Detailed Description Text (111):

Additional polymeric soil release agents include the soil release agents of U.S. Pat. No. 4,877,896, issued Oct. 31, 1989 to Maldonado et al, which discloses anionic, especially sulfoaroyl, end-capped terephthalate esters, said patent being incorporated herein by reference. The terephthalate esters contain unsymmetrically substituted oxy-1,2-alkyleneoxy units. Included among the soil release polymers of U.S. Pat. No. 4,877,896 are materials with polyoxyethylene hydrophile components or C.sub.3 oxyalkylene terephthalate (propylene terephthalate) repeat units within the scope of the hydrophobe components of (b)(i) above. It is the polymeric soil release agents characterized by either, or both, of these criteria that particularly benefit from the inclusion of the N-(1,2-propanediol) fatty acid amides hereof, in the presence of anionic surfactants.

Detailed Description Text (153):

Compounds known, or which become known, for reducing or suppressing the formation of suds can be incorporated into the compositions of the present invention. The incorporation of such materials, hereinafter "suds suppressors," can be desirable because the N-(1,2-propanediol) fatty acid amide surfactants hereof can increase suds stability of the detergent compositions. Suds suppression can be of particular importance when the detergent compositions include a relatively high sudsing

surfactant in combination with the N-(1,2-propanediol) fatty acid amide surfactant. Suds suppression is particularly desirable for compositions intended for use in front loading automatic washing machines. These machines are typically characterized by having drums, for containing the laundry and wash water, which have a horizontal axis and rotary action about the axis. This type of agitation can result in high suds formation and, consequently, in reduced cleaning performance. The use of suds suppressors can also be of particular importance under hot water washing conditions and under high surfactant concentration conditions.

Detailed Description Text (155):

The detergent compositions may also contain non-surfactant suds suppressors. These include, for example, list: high molecular weight hydrocarbons such as paraffin, fatty acid esters (e.g., fatty acid triglycerides), fatty acid esters of monoaliphatic alcohols, aliphatic C.<sub>sub.18</sub> -C.<sub>sub.40</sub> a ketones (e.g. stearone), etc. Other suds inhibitors include N-alkylated amino triazines such as trito hexa-alkylmelamines or di- to tetra-alkyldiamine chlorotriazines formed as products of cyanuric chloride with two or three moles of a primary or secondary amine containing 1 to 24 carbon atoms, propylene oxide, and monostearyl phosphates such as monostearyl alcohol phosphate ester and monostearyl di-alkali metal (e.g. K, Na, and Li) phosphates and phosphate esters. The hydrocarbons such as paraffin and haloparaffin can be utilized in liquid form. The liquid hydrocarbons will be liquid at room temperature and atmospheric pressure, and will have a pour point in the range of about -40.degree. C. and about 5.degree. C., and a minimum boiling point not less than about 110.degree. C. (atmospheric pressure). It is also known to utilize waxy hydrocarbons, preferably having a melting point below about 100.degree. C. The hydrocarbons constitute a preferred category of suds suppressor for detergent compositions. Hydrocarbon suds suppressors are described, for example, in U.S. Pat. No. 4,265,779, issued May 5, 1981 to Gandolfo, et al, incorporated herein by reference. The hydrocarbons, thus, include aliphatic, alicyclic, aromatic, and heterocyclic saturated or unsaturated hydrocarbons having from about 12 to about 70 carbon atoms. The term "paraffin," as used in this suds suppressor discussion, is intended to include mixtures of true paraffins and cyclic hydrocarbons.

Detailed Description Text (156):

Another preferred category of non-surfactant suds comprises silicone suds suppressors. This category includes the use of polyorganosiloxane oils, such as polydimethylsiloxane, dispersions or emulsions of polyorganosiloxane oils or resins, and combinations of polyorganosiloxane with silica particles wherein the polyorganosiloxane is chemisorbed or fused onto the silica. Silicone suds suppressors are well known in the art and are, for example, disclosed in U.S. Pat. No. 4,265,779, issued May 5, 1981 to Gandolfo et al and European Patent Application No. 89307851.9, published Feb. 7, 1990, by Starch, M. S., both incorporated herein by reference.

Detailed Description Text (164):

For any detergent compositions to be used in automatic laundry washing machines, suds should not form to the extent that they overflow the washing machine. Suds suppressors, when utilized, are preferably present in a "suds suppressing amount." By "suds suppressing amount" is meant that the formulator of the composition can select an amount of this suds controlling agent that will sufficiently control the suds to result in a low-sudsing laundry detergent for use in automatic laundry washing machines. The amount of suds control will vary with the detergent surfactants selected. For example, with high sudsing surfactants, relatively more of the suds controlling agent is used to achieve the desired suds control than with lesser foaming surfactants. In general, a sufficient amount of suds suppressor should be incorporated in low sudsing detergent compositions so that the suds that form during the wash cycle of the automatic washing machine (i.e., upon agitation of the detergent in aqueous solution under the intended wash temperature and concentration conditions) do not exceed about 75% of the void volume of washing machine's containment drum, preferably the suds do not exceed about 50% of said void volume, wherein the void volume is determined as the difference between total volume of the containment drum and the volume of the water plus the laundry.

Detailed Description Text (167):

In addition to the foregoing ingredients which are generally employed in fabric

laundry, dishwashing and hard surface cleaners for cleansing and sanitizing purposes, the glycerol amide surfactant compositions herein can also be used with a variety of other adjunct ingredients which provide still other benefits in various compositions within the scope of this invention. The following illustrates a variety of such adjunct ingredients, but is not intended to be limiting thereof.

Detailed Description Text (169):

Various through-the-wash fabric softeners, especially the impalpable smectite clays of U.S. Pat. No. 4,062,647, Storm and Nirschl, issued Dec. 13, 1977, as well as other softener clays known in the art, can be used typically at levels of from about 0.5% to about 10% by weight in the present compositions to provide fabric softener benefits concurrently with fabric cleaning. The glucose amides of the present invention cause interference with the softening performance of the clay than do the common polyethylene oxide nonionic surfactants of the art. Clay softeners can be used in combination with amine and cationic softeners, as disclosed, for example, in U.S. Pat. No. 4,375,416, Crisp et al, Mar. 1, 1983 and U.S. Pat. No. 4,291,071, Harris et al, issued Sep. 22, 1981.

Detailed Description Text (173):

The N-(1,2-propanediol) fatty acid amides can be used in combination with polyhydroxy fatty acid amide compounds, which are nonionic surfactants conveniently available from renewable resources. Such surfactants have the general formula R.<sup>2</sup>C(O)NR.<sub>3</sub>Z, wherein R.<sup>2</sup> is typically C.<sub>7</sub>-C.<sub>19</sub> alkyl or alkenyl, preferably C.<sub>9</sub>-C.<sub>17</sub> alkyl or alkenyl, R.<sup>3</sup> is typically --CH.<sub>2</sub>, --C.<sub>2</sub>H.<sub>5</sub> or --C.<sub>3</sub>H.<sub>7</sub> or --CH.<sub>2</sub>CH.<sub>2</sub>OH and Z is a polyhydroxyhydrocarbyl moiety having a linear hydrocarbyl chain with at least three hydroxyls affixed to said chain. Z is preferably derived from a reducing sugar such as glucose, fructose, maltose, xylose, lactose or mixtures thereof. See U.S. Pat. Nos. 2,703,798 and 2,965,576. Use of the glycerol amide surfactants herein admixed with said polyhydroxy fatty acid amides at weight ratios typically in the range of 5:1 to 1:5 provides high sudsing compositions especially useful as high sudsing dishwashing liquids. Such mixtures are typically used at levels of from about 5% to about 50% by weight of such liquid compositions, together with anionic surfactants and other ingredients noted herein.

Detailed Description Text (176):

Liquid detergent compositions can contain water and other solvents as carriers. Low molecular weight primary or secondary alcohols exemplified by methanol, ethanol, propanol, and isopropanol are suitable. Monohydric alcohols are preferred for solubilizing surfactant, but polyols such as those containing from 2 to about 6 carbon atoms and from 2 to about 6 hydroxy groups (e.g., 1,3-propanediol, ethylene glycol, glycerine, and 1,2-propanediol) can also be used.

Detailed Description Text (178):

This invention further provides a method for cleaning substrates, such as fibers, fabrics, hard surfaces, skin, etc., by contacting said substrate, with a detergent composition comprising detergents enzyme and one or more anionic, nonionic, or cationic surfactants, wherein said detergent composition contains an enzyme performance-enhancing amount of N-(1,2-propanediol) fatty acid amide, typically at least about 1%, by weight, of the composition, in the presence of a solvent such as water or water-miscible solvent (e.g., primary and secondary alcohols). Agitation is preferably provided for enhancing cleaning. Suitable means for providing agitation include rubbing by hand or preferably with use of a brush, sponge, cloth, mop, or other cleaning device, automatic laundry washing machines, automatic dishwashers, etc.

Detailed Description Text (186):

The following Examples II(a) - 11(c) illustrate the preparation of 3-methylamino-1,2-propanediol (MAPD) which can be subsequently reacted with fatty acid esters to provide detergents surfactants for use in this invention.

Detailed Description Text (213):

A laundry detergent containing enzymes but without LAS surfactant is as follows.

Detailed Description Text (223):

For compositions where especially high sudsing is desired (e.g., dishwashing), it is preferred that less than about 5%, preferably less than about 2%, most preferably no C.sub.14 or higher fatty acids be present, since these can suppress sudsing. Accordingly, the formulator of high sudsing compositions will desirably avoid the introduction of suds-suppressing amounts of such fatty acids into high sudsing compositions with the glycerol fatty acid amide, and/or avoid the formation of C.sub.14 and higher fatty acids on storage of the finished compositions. One simple means is to use C.sub.12 ester reactants to prepare the fatty acid glycerol amides herein. Fortunately, the use of amine oxide or sulfobetaine surfactants can overcome some of the negative sudsing effects caused by the fatty acids. In another mode, the "crude" fatty acid glycerol amide surfactant containing free fatty acids can be subjected to a further reaction with, for example, monoethanolamine, in the presence of 6%-10% methanol solvent at 65.degree. C.-85.degree. C. to convert the acids to their corresponding ethanalamides, which do not inhibit sudsing.

Detailed Description Text (227) :

A mix is prepared using water at 170.degree. F. (77.degree. C.) .+- .10.degree. to which is added the fatty acid glycerol amide surfactant at the same temperature, to which is subsequently added a portion of the cetyl alcohol and a portion of the stearyl alcohol, respectively, at the same temperature, followed by addition of the ethylene glycol distearate at that temperature, followed by the addition of the tricetyl methyl ammonium chloride, at which time the system is mixed for a minimum of about 11 minutes .+- .3 minutes, typically over a range from about 8 minutes to about 35 minutes. The silicone premix is added at 170.degree. F. (77.degree. C.) .+- .10.degree.. The preservative is then added at the same temperature and mixing is continued for 5-30 minutes.

Detailed Description Paragraph Table (2) :

Ingredient	Weight %
Lauramide of MAPD 14 C.sub.14-15 EO(2.25)	
sulfate, Na salt 10.0 C.sub.14-15 EO(7)	
anhydride.sup.1 4.0 C.sub.12-14 alkenylsuccinic	
anhydride.sup.1 4.0 C.sub.12-14 fatty acid* 3.0 Citric acid (anhydrous) 4.6 Protease	
(enzyme).sup.2 0.37 Termamyl (enzyme).sup.3 0.12 Lipolase (enzyme).sup.4 0.36	
Carezyme (enzyme).sup.5 0.12 Dequest 2060S.sup.6 1.0 NaOH (pH to 7.6) 5.5 1,2	
propanediol 4.7 Ethanol 4.0 Sodium metaborate 4.0 CaCl <sub>2</sub> .sub.2 0.014 Ethoxylated	
tetraethylene pentamine.sup.7 0.4 Brightener.sup.8 0.13 Silane.sup.9 0.04 Soil	
release polymer.sup.10 0.2 Silicone (suds control).sup.11 0.4 Silicone	
dispersant.sup.12 0.2 Water and minors Balance	
.sup.1 As SYNPRAX 3 from ICI or DTSA from Monsanto. .sup.2 As Protease B as described in EPO 0342177 November 15, 1989, percentage at 40 g/l. .sup.3 Amylase, from NOVO; percentage at 300 KNU/g. .sup.4 Lipase, from NOVO; percentage at 100 KLU/g. .sup.5 Cellulase from NOVO; percentage at 5000 CEVU/l. .sup.6 Available from Monsanto. .sup.7 From BASF as LUTENSOL P6105. .sup.8 BLANKOPHOR CPG766, Bayer. .sup.9 Silane corrosion inhibitor, available as A1130 from Union Carbide or DYNASYLAN TRIAMINO from Huls. .sup.10 Polyester, per U.S. Pat. No. 4,711,730. .sup.11 Silicone suds control agent available as Q23302 from Dow Corning. .sup.12 Dispersant for silicone suds control agent available as DC3225C from Dow Corning. *Preferred fatty acid is topped palm kernel, comprising 12% <u>oleic acid</u> an 2% each of stearic and linoleic.	

Detailed Description Paragraph Table (4) :

Ingredients	Weight %
C.sub.14-15 alkyl polyethoxylate (2.25)	
sulfonic acid 19.50 C.sub.12-14 alkyl ester sulfonic acid, <u>methyl ester</u> 2.00	
Lauramide of MAPD 6.50 Sodium tartrate mono- and di-succinate (80:20 mix) 4.00	
Citric acid 3.80 C.sub.12-14 fatty acid 3.00 Tetraethylene pentaamine ethoxylate (15-18) 1.50 Ethoxylated copolymer of polyethylene - 0.20 polypropylene terephthalate polysulfonic acid Protease B (34 g/l).sup.2 0.68 Lipase (100 KLU/g).sup.3 0.47 Cellulase (5000 cevu/g).sup.4 0.14 Brightener 36.sup.5 0.15	
Ethanol 5.20 Monoethanolamine 2.00 Sodium formate 0.32 1,3 propane diol 8.00 Sodium hydroxide 3.10 Silicone suds suppressor 0.0375 Boric acid 2.00 Water/misc. Balance to 100	
.sup.1 Prepared as disclosed above.	
.sup.2 Protease B is a modified bacterial serine protease described in European Patent Application Serial No. 87 303761 filed April 28, 1987, particularly pages 17, 24 and 98. .sup.3 Lipase used herein is the <u>lipase</u> obtained by cloning the gene from	

Humicola lanuginosa and expressing the gene in Aspergillus oryzae, as described in European Patent Application 0 258 068, commercially available under the trade name LIPOLASE (ex Novo Nordisk A/S, Copenhagen Denmark). <sup>4</sup> Cellulase used herein is sold under the trademark CAREZYME (Novo Nordisk, A/S, Copenhagen Denmark). <sup>5</sup> Brightener 36 is commercially available as TINOPAL TAS 36. The brightener can be premixed with the monoethanolamine and water (4.5% brightener, 60% MEA, 35.5% H<sub>2</sub>O) and added to the composition.

## CLAIMS:

1. A method for cleaning soiled tableware, comprising contacting said tableware with an aqueous medium containing an effective amount of a composition comprising:
  - (a) from about 1% to about 30% by weight of an N-(1,2-propanediol) fatty acid amide surfactant of the formula ##STR17## wherein R is a C<sub>7</sub>-C<sub>21</sub> hydrocarbyl species and R<sup>1</sup> is a C<sub>1</sub>-C<sub>6</sub> hydrocarbyl or substituted hydrocarbyl species,
  - (b) at least about 1% by weight of one or more non-amide detergents surfactants;
  - (c) from 0% to about 50% by weight of a detergency builder;
  - (d) from 0% to about 5% by weight of a detergents enzyme;
  - (e) from 0% to about 25% by weight of active adjunct materials; and
  - (f) the balance of the composition comprising moisture and carrier ingredients, said contact being under conditions of agitation.

**WEST**
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L11: Entry 73 of 74

File: DWPI

Aug 21, 1986

DERWENT-ACC-NO: 1986-260821

DERWENT-WEEK: 198640

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**TITLE:** Polyglycerin-fatty acid ester prepn. - by culturing poly:glycerine and fatty acid in presence of a hydrolase

**PATENT-ASSIGNEE:**

ASSIGNEE	CODE
DAIICHI KOGYO SEIYAKU CO LTD	DAII
SHISEDIO KK	SHIS

**PRIORITY-DATA:** 1985JP-0028958 (February 15, 1985)

**PATENT-FAMILY:**

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 61187795 A	August 21, 1986		004	
JP 88013677 B	March 26, 1988		000	

**APPLICATION-DATA:**

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 61187795A	February 15, 1985	1985JP-0028958	

**INT-CL (IPC):** B01F 17/42; C08G 65/32; C12P 7/64

**ABSTRACTED-PUB-NO:** JP 61187795A

**BASIC-ABSTRACT:**

Prepn. of polyglycerin-fatty acid esters comprises incubating (a) a polyglycerin having an average polymerisation degree of 3 or more and (b) a higher fatty acid having a chain length of 8-22C in the presence of (c) a hydrolase.

Pref. (b) are satd., unsatd. or OH-contg. higher fatty acids such as caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, arachic acid, behenic acid, oleic acid, elaidic acid, erucic acid, ricinoleic acid, linolic acid and linoleic acid. (c) is pref. lipase.

**USE/ADVANTAGE** - Selective reactivity of terminal OH-gp. is high. The prods. of terminal-OH-esterified polyglycerin-fatty acid esters are usable as additives for cosmetics, medicines and foods, and are esp. excellent as non-toxic nonionic surfactants.

**CHOSN-DRAWING:** Dwg.0/0

**TITLE-TERMS:** FATTY ACID ESTER PREPARATION CULTURE POLY GLYCEROL FATTY ACID PRESENCE HYDROLASE

**DERWENT-CLASS:** A96 B04 D13 D16 D21

**CPI-CODES:** A10-E07B; A10-E07C; A12-V01; A12-V04; A12-W09; B04-C03C; B12-L02;

## WEST

## End of Result Set

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L11: Entry 74 of 74

File: DWPI

Aug 20, 1986

DERWENT-ACC-NO: 1986-260195

DERWENT-WEEK: 198640

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TITLE: Novel sorbitol oleic acid ester - useful as non-toxic, nonionic surfactant

## PATENT-ASSIGNEE:

ASSIGNEE	CODE
DAIICHI KOGYO SEIYAKU CO LTD	DAII

PRIORITY-DATA: 1985JP-0026831 (February 14, 1985)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 61186347 A	August 20, 1986		005	
JP 87056142 B	November 24, 1987		000	

## APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 61186347A	February 14, 1985	1985JP-0026831	

INT-CL (IPC): A61K 7/00; A61K 9/00; A61K 31/23; B01F 17/38; C07C 69/58; C12P 7/62

ABSTRACTED-PUB-NO: JP 61186347A

## BASIC-ABSTRACT:

Novel sorbitol oleic acid ester is of formula (I) (where R<sub>1</sub> = acyl derived from oleic acid, i.e. 9-octa-decenoyl gp.; R<sub>2</sub> = R<sub>1</sub> or H).

USE - The cpds. are non-toxic and useful as non-ionic surfactants for foodstuff, cosmetics and pharmaceuticals. They have useful biological activities e.g. antineoplastic, immuno-activating, antibiotic, or plant-growth inhibiting activities.

In an example, 6 litres of a phosphate buffer of pH 5.4 had dissolved in it 12g of a commercially available lipase prep. (derived from *Candida Cylindracea*). The soln. was subjected to determination using a filter, and was fed to a jar fermenter of 10 litre capacity, to which was added 109.3g of sorbitol. The mixt. was warmed to 35 deg.C and 169.2g of oleic acid was added dropwise through a dropping funnel to form a micro-emulsion.

Incubation was conducted at 35 deg.C for 72 hrs. with 350 rpm. The reaction mixt. was freeze-dried, and then subjected to extn. with chloroform. The extract soln. was concd. under reduced pressure.

The conc. was dissolved in tetrahydrofuran (not contg. BHT as a stabiliser), and subjected to centrifugation to separate the tetrahydrofuran-soluble portion and the tetrahydrofuran-non-soluble portion.

The soluble portion was subjected to gel-permeation chromatography to fractionate into monoester fraction and diester fraction.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: NOVEL SORBITOL OLEIC ACID ESTER USEFUL NON TOXIC NONIONIC SURFACTANT

DERWENT-CLASS: B05 B07 C03 D13 D21 E17

CPI-CODES: B10-A07; B12-A01; B12-D02; B12-G07; B12-L02; B12-M09; B12-P09; C10-A07; C12-A01; C12-D02; C12-G07; C12-L02; C12-M09; C12-P09; D03-H01; D08-B13; E10-A07;

CHEMICAL-CODES:< pre> Chemical Indexing M2 \*01\* Fragmentation Code H4 H404 H405 H484 H7 H721 H722 H8 J0 J011 J012 J2 J271 J272 K0 L8 L814 L821 L833 M225 M231 M262 M281 M282 M315 M321 M332 M344 M383 M391 M416 M710 M903 P001 P135 P220 P434 P633 Q220 Q254 Q616 Markush Compounds 198640-08401-N Chemical Indexing M3 \*01\* Fragmentation Code H4 H404 H405 H484 H7 H721 H722 H8 J0 J011 J012 J2 J271 J272 K0 L8 L814 L821 L833 M225 M231 M262 M281 M315 M321 M332 M344 M383 M391 M416 M710 M903 P001 P135 P220 P434 P633 Q220 Q254 Q616 Markush Compounds 198640-08401-N

UNLINKED-DERWENT-REGISTRY-NUMBERS: 0032S; 0954S

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1986-112403

**WEST**  

L11: Entry 66 of 74

File: JPAB

Aug 20, 1986

PUB-NO: JP361186347A

DOCUMENT-IDENTIFIER: JP 61186347 A

TITLE: NOVEL SORBITOL OLEIC ACID ESTER

PUBN-DATE: August 20, 1986

## INVENTOR-INFORMATION:

NAME	COUNTRY
KIYONO, HAJIME	
UCHIBORI, TAKESHI	
INAMASU, SACHIKO	
NISHITANI, HISAYUKI	

## ASSIGNEE-INFORMATION:

NAME	COUNTRY
DAI ICHI KOGYO SEIYAKU CO LTD	
KIYONO HAJIME	
UCHIBORI TAKESHI	

APPL-NO: JP60026831

APPL-DATE: February 14, 1985

INT-CL (IPC): C07C 69/58; C12P 7/62; A61K 7/00; A61K 9/10; B01F 17/38

## ABSTRACT:

NEW MATERIAL: The compound of formula (R<sub>1</sub> is acyl group derived from oleic acid, i.e. 9-octadecenoyl; R<sub>2</sub> is R<sub>1</sub> or H).

USE: A non-toxic, nonionic surfactant for food, cosmetic and medicinal use. It has valuable bioactivity such as antitumor activity, immunoactivating effect, antibacterial effect, plant-growth suppressing effect, etc.

PREPARATION: Sorbitol and oleic acid are incubated in the presence of a hydrolase, especially lipase until the reaction progresses to the equilibrium state, when the reaction is terminated and the compound of formula is separated from the reaction liquid and purified.

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L4: Entry 16 of 26

File: USPT

Apr 25, 1995

DOCUMENT-IDENTIFIER: US 5409736 A

TITLE: Deacidification of cellulose based materials using perfluorinated carriers

Brief Summary Paragraph Table (2):

TABLE 2 Solubility \*Surfactant PF-Morpholine  
PF-poxyether Surfynol CT-136 N N Surfynol  
 CT-141 N N Surfynol CT-324 N N Silwet L-77 N N (silicone polyether copolymer)  
 Niaproof 4 N N Niaproof 08 N N Zonyl FSA N S (lithium fluoroalkyl carboxylate) Zonyl  
 FSB N S (ammonium fluoroalkyl phos- phate) Forafac 1033 S S Forafac 1110 N N Ninate  
 411 N N Makon 4 N N Kessco GMS N N (glycerol stearate) Fluorad FC-98 S S (potassium  
 perfluoroalkyl sulfo- nate) Fluorad FC-120 N N (ammonium perfluoroalkyl sulfo- nate)  
 Fluorad FC-170-C N N Fluorad FC-171 S S (fluorinated alkyl alkoxylates) Fluorad  
 FC-129 Y S (potassium fluoroalkyl carboxy- late) Fluorad FC-135 N N (fluorinated  
 alkyl quaternary ammonium iodide) Fluorad FC-430 N S Fluorad FC-431 N S  
 (fluoroaliphatic polymeric ester) Fluorad FC-740 S S (fluorinated alkyl polymeric  
 ester) Fluorad FC-100 N N (fluoroalkyl sulfonate, sodium salt) Atsurf 1910 N N  
 Arlatone G N N (polyoxyethylene fatty glyceride) Tween 85 N Hypermer LP1 S N  
 Hypermer LP4 N N Hypermer LP5 N N Hypermer LP6 N N Hypermer LP7 N N Hypermer B246 N  
 N Span 85 N N (sorbitan trioleate) IL-2457 N N PS-3 N N (polyester/polyamine  
 copolymer) PS-4 N N (polyester/polyamine copolymer) Disperby K-182 N N BYK-W995 N N  
 Fomblin .RTM. Y Y (perfluor polyoxyether alcanoic acid)

N None; S Slight; Y >500 ppm \*Refer to Table  
 4 for manufacturers

Brief Summary Paragraph Table (3):

TABLE 3 Dispersion \*Surfactant PF-Morpholine  
PF-poxyether Surfynol CT-136 N N Surfynol  
 CT-141 N N Surfynol CT-324 N N Silwet L-77 N P Niaproof 4 N N Niaproof 08 N N Zonyl  
 FSA P N Zonyl FSB P N Forafac 1033 P P Forafac 1110 N N Ninate 411 N N Makon 4 N N  
 Kessco GMS N N Fluorad FC-98 P N Fluorad FC-120 N N Fluorad FC-170-C N N Fluorad  
 FC-171 P N Fluorad FC-129 E P Fluorad FC-135 N N Fluorad FC-430 N N Fluorad FC-431 N  
 N Fluorad FC-740 P P Fluorad FC-100 N N Atsurf 1910 N N Arlatone G N N Tween 85 N N  
 Hypermer LP1 N N Hypermer LP4 N N Hypermer LP5 N N Hypermer LP6 N N Hypermer LP7 N N  
 Hypermer B246 P N Span 85 N N IL-2457 N N PS-3 N N PS-4 N N Disperby K-182 N N  
 BYK-W995 N N Fomblin E E N None; P Poor; G  
 Good; E Excellent \*The tradenames are used in Table 3 for brevity. Refer to Table 2  
 for generic names, where available.

Brief Summary Paragraph Table (4):

TABLE 4 Odor Manufacturer Surfactant Odor  
 Allentown, Pennsylvania Surfynol CT-141 1 Surfynol CT-32 2 Union Carbide Silwet L-77  
 1 Danbury, Connecticut Niacet Niaproof 4 4 Buffalo, New York NiaRooft 08 4 E. I.  
 duPont deNemours Zonyl FSA 3 Wilmington, Delaware Zonyl FSB 2 Atochem Forafac 1033 2  
 France Forafac 1110 4 Stepan Company Ninate 411 1 Northfield, Illinois Makon 4 0  
 Kessco GMS 1 3M Company Fluorad FC-98 0 St. Paul, Minnesota Fluorad FC-120 5 Fluorad  
 FC-170-C 3 Fluorad FC-171 1 Fluorad FC-129 2 Fluorad FC-135 4 Fluorad FC-430 3  
 Fluorad FC-431 4 Fluorad FC-740 3 Fluorad FC-100 2 ICI Americas Atsurf 1910 2  
 Wilmington, Delaware Arlatone G 1 Tween 85 2 Hypermer LP1 1 Hypermer LP4 2 Hypermer  
 LP5 2 Hypermer LP6 5 Hypermer LP7 3 Hypermer B246 3 Span 85 1 IL-2457 2 PS-3 2 PS-4  
 2 BYK Chemie Disperby K-182 3 Germany BYK-W995 2 Ausimont Fomblin 0 Morristown, New  
 Jersey 5 very strong, over powering odor; 4

strong odor; 3 moderate odor; 2 weak odor; 1 barely detectable odor; 0 no detectable odor \*Refer to Table 2 for generic names, where available

**WEST**  

L4: Entry 17 of 26

File: USPT

Jan 17, 1995

DOCUMENT-IDENTIFIER: US 5382286 A

TITLE: Acoustic gel

Detailed Description Text (3):

Before the gel is applied to the radiating surface of the projector, it is preferable that the surface should be pretreated to ensure maximum wettability and adhesion of the gel. Pretreatment with a surfactant such us Joy.RTM. Tween.RTM. 20, 60 or 80, Agral.RTM.90, Triton N-57, Triton X114, Atsurf 241, Atsurf 249 detergents, increase wettability and gel adhesion depending to some extent upon the nature of the projector face. The preferred surfactant is NAJ which is a blend of equal volumes of 1% polysaccharide polymer in water, 1% Aerosol OT.RTM. solution and 10% Joy.RTM. detergent. Aerosol OT.RTM. is sodium dioctyl sulfosuccinate, and Joy.RTM. detergent is a mixture of saponified fatty acids.

## WEST

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L4: Entry 18 of 26

File: USPT

Aug 30, 1994

DOCUMENT-IDENTIFIER: US 5342538 A

TITLE: Liquid suspension of polyethylene oxide for use in treating paper and pulp wastewater

Detailed Description Text (9):

The acidic compound is preferably either NaHSO<sub>4</sub> or aluminum chlorhydrol. When aluminum chlorhydrol is used it is preferable that the suspension agent be Atkemix ATSURF 595, a glycerol mono-oleate, sold by ICI, or Brij 35, a polyoxyethylene lauryl ether.

**WEST**  

L4: Entry 20 of 26

File: USPT

Jan 12, 1993

DOCUMENT-IDENTIFIER: US 5178770 A

TITLE: Method of treating BCTMP/CTMP wastewater

Detailed Description Text (25):

A particularly effective liquid suspension of polyethylene oxide includes 25.8% propylene glycol, 43.4% glycerin, 30% dry polyethylene oxide, 0.15% Atkemix Hypermer LP6 fatty acid ester, 0.15% Atkemix Hypermer PS2 dispersing agent, and 0.5% of an anionic surfactant, such as Atsurf 595.

**WEST**  

L4: Entry 21 of 26

File: USPT

Oct 27, 1992

DOCUMENT-IDENTIFIER: US 5158710 A

TITLE: Aqueous cleaner/degreaser microemulsion compositions

Detailed Description Paragraph Table (28):

	Component Wt. %
	Monoethanolamine 0.5 Sodium Metasilicate 2.0
1-Phenoxy-2-propanol 7.0 (Dowanol PPh)	Tripropyleneglycol monomethyl 3.0 ether
Dodecylbenzenesulfonic acid 3.0 Soft H.sub.2 O 82.4	Isodecyloxypropylimino- 2.0
dipropionic acid ("Alkali Surfactant", Tomah Products, 35%)	Defoaming agent 0.1
(Atsurf F-12) 100.0	

## WEST

 Generate Collection 

L4: Entry 22 of 26

File: USPT

Jan 7, 1992

DOCUMENT-IDENTIFIER: US 5079122 A

TITLE: Toner compositions with charge enhancing additives

Brief Summary Text (28):

Examples of the nonionic fluorosurfactant charge enhancing additives include those nonionic fluorosurfactants available from, for example, E.I. DuPont Chemical Company, such as Zonyl FSN-100 and Zonyl FSO-100; nonionic fluorosurfactants available from, for example, ICI Americas Inc., such as Atsurf F-31 and Atsurf F-35; nonionic fluorosurfactants available from, for example, 3M Corporation, such as FC-170-C; and nonionic fluorosurfactants available from, for example, Atochem Inc., such as Forafac 1110. The aforementioned nonionic fluorosurfactants are believed to have a molecular structure comprised of a segment of polyalkylene oxide, such as polyethylene oxide, and a segment of polyperfluoroethylene separated by an alkylene structure so that the nonionic fluorosurfactant molecule has a chemical structure, such as  $F(CF_{sub.2}CF_{sub.2})_{sub.3-20}-CH_{sub.2}CH_{sub.2}-(CH_{sub.2}CH_{sub.2}O)_{sub.3-20}$ , wherein the polyperfluoroethylene segment may be linear or branched. Typical properties of this type nonionic fluorosurfactants, some of which are disclosed in U.S. Pat. No. 4,835,084, are shown in the Table.

## WEST

 Generate Collection 

L4: Entry 23 of 26

File: USPT

Jan 2, 1990

DOCUMENT-IDENTIFIER: US 4891195 A

TITLE: Synergistic effect of oil-soluble surfactants and dibasic carboxylic acids on SO<sub>2</sub> removal enhancement in flue gas desulfurization processDetailed Description Paragraph Table (3):

TABLE II Summary of Surfactant's Performance  
 in SO<sub>2</sub> Wet Scrubbers Using Limestone Slurry Positive Effect No Effect Negative  
 Effect HLB=2 (SPAN's) HLB=8 (SPAN & TWEEN)  
 HLB=4 (SPAN's) IGEPAL CO-210 IEGPAL DM-430, IGEPAL CA-420, 520 IGEPAL CA-210 IGEPAL  
 DM-710 IGEPAL CA-620 IGEPAL RC-630 IGEPAL RC-520 IGEPAL CA-630 IGEPAL CO-890, 990  
 SPAN 20 SPAN 60 (solids) SPAN 85 SPAN 65 TWEEN 60 TWEEN 80 ALIPAL CD-128 ALIPAL  
 AB-436 IGEPON T-33 PVP K-30 TRITON CF-10 TRITON X-114 TRITON GR-7M TRITON X-155  
 TRITON X-15 DOSS TRITON CF-32 TRITON N-42, N-57 TRITON N-60 TRITON DF-12 TETRONIC  
 701 TETRONIC 704 (2) TETRONIC 70R1, 110R1 TETRONIC 90R1, 130R1 TETRONIC 150R1  
 TETRONIC 70R2 TETRONIC 25R8, 150R8 TETRONIC 908 TETRONIC 70R4 TETRONIC 50R4, 90R8  
 TETRONIC 90R4 TETRONIC 150R4 TETRONIC 110R7 TETRONIC 1304, 1502 PLURONIC F77,  
 PLURACOL E400 F68 PLURONIC L35 PLURONIC L31 PLURONIC L62D PLURONIC L72 PLURONIC 25R1  
 PLURONIC L101 PLURAFAC RA-40 PLURAFAC A-24 PLURACOL P-410 GAFAC RM-410, GAFAC RE-410  
 RS-410 GAFAC BI-750 (rxn) acidic ANTARA LE-700 ANTARA LM-400 ANTARA HR-719 ANTARA  
 LK-500 ANTROX BL-214 ARLACEL 83 ARLACEL 60 ARLACEL 165 ATMUL 500 ATSURF 2802 MYRJ 53  
 NIAX POLYOL LHT-240 ALFONIC 1012-60 ALFONIC 1214-70 SURFONIC LF-17 EMPHOS PS-220  
 EMULPHOGENE BC-610 EMULPHOGENE BC-420 NEKAL NF NEKAL WT-27 DOSS OT-100 Hystrene 3695  
 NIax Polyol BRIJ 30 BRIJ 93 BRIJ 52 WITCAMIDE 5138 AMP-95 (R-2233) Ethoduomeen T-13  
 WITCONOL 14 Mackamide NOA Mackamide Ole. DEA Mackamide Soyamide DEA KELIG 3000

Detailed Description Paragraph Table (5):

## GLOSSARY

SURFACTANTS USED IN SO<sub>2</sub> ABSORPTION MODULE TESTING Name Chemical Structure HLB  
 T\* M\*\* Form

SPAN 20  
 Sorbitan monolaurate 8.6 N ICI liq SPAN 40 Sorbitan monopalmitate 6.7 N ICI liq SPAN  
 60 Sorbitan monostearate 4.7 N ICI liq SPAN 65 Sorbitan tristearate 2.1 N ICI liq  
 SPAN 80 Sorbitan monoleate 4.3 N ICI liq SPAN 85 Sorbitan trioleate 1.8 N ICI liq  
 HLB = 2 8% SPAN 80 + 92% SPAN 85 2.0 N ICI liq HLB = 4 88% SPAN 80 + 12% SPAN 85 4.0  
 N ICI liq HLB = 8 65% SPAN 80 + 35% TWEEN 80 8.0 N ICI, liq Atlas ARLACEL 60  
 Sorbitan monostearate 4.7 N ICI s ARLACEL 83 Sorbitan sequioleate 3.7 N ICI liq  
 ARLACEL 165 Glycerol monostearate POE 11.0 N ICI s stearate BRIJ 30 POE(4) lauryl  
 ether 9.7 N ICI liq BRIJ 52 Polyoxyethylene(2) cetyl ether 5.3 N ICI s BRIJ 93  
 Polyoxyethylene(2) oleylether 4.9 N ICI liq MYRJ 53 Polyoxyethylene(50) stearate  
 17.9 N ICI liq ATMUL 500 2.5 N ICI liq ATSURF 2802 Butylated hydroxyanisole 3.5 N  
 ICI s TWEEN 60 POE(20) sorbitan monostearate 14.9 N Atlas wax TWEEN 80 POE(20)  
 sorbitan monoleate 15.0 N Atlas liq TRITON N-42 Nonylphenoxypoly(EO) ethanol 9.1 N  
 Rohm & H liq TRITON N-57 Nonylphenoxypoly(EO) ethanol 10.0 N Rohm & H liq TRITON  
 N-60 Nonylphenolpoly(EO) ethanol -- N Rohm & H liq TRITON X-15  
 Octylphenoxypolyethoxyethanol 3.6 N Rohm & H liq TRITON N-114  
 Octylphenolethoxyxylate 12.4 N Rohm & H liq TRITON N-155 Alkylarylpolyether alcohol  
 12.5 N Rohm & H 90% 1 TRITON DF-12 Modified POE linear alcohol 10.6 N Rohm & H liq  
 TRITON GR-7M Dioctylsodium sulfosuccinate -- A Rohm & H 67% 1 (DOSS) TRITON CF-10  
 Alkylaryl polyether 14.0? N Rohm & H liq TRITON CF-21 same as above -- N Rohm & H  
 liq TRITON CF-32 same as above -- N Rohm & H liq TETRONIC 701 block copolymers of EO  
 & PO 3.0 N BASF W liq TETRONIC 702 same as above 7.0 N BASF W liq TETRONIC 704 same

as above 15.0 N BASF W liq TETRONIC 901 same as above 2.5 N BASF W liq TETRONIC 808 same as above 30.5 N BASF W s TETRONIC 50R4 block copolymers of EO & PO 8.9 N BASF W liq TETRONIC 70R2 same as above 4.8 N BASF W liq TETRONIC 70R4 same as above 7.9 N BASF W liq TETRONIC 90R4 same as above 7.1 N BASF W liq TETRONIC 90R8 same as above 12.9 N BASF W s TETRONIC 110R7 same as above 9.5 N BASF W s TETRONIC 150R4 same as above 5.4 N BASF W pas TETRONIC 150R8 same as above 11.2 N BASF W s TETRONIC 70R1 same as above 2.9 N BASF W liq TETRONIC 90R1 same as above 2.4 N BASF W liq TETRONIC 110R1 same as above 1.9 N BASF W liq TETRONIC 130R1 same as above 1.4 N BASF W liq TETRONIC 150R1 same as above 1.0 N BASF W liq TETRONIC 1304 block copolymers of PO & EO 13.5 N BASF W pas TETRONIC 1502 same as above 5.0 N BASF W liq PLURONIC F68 block copolymers of PO & EO 30.5 N BASF W liq PLURONIC F77 same as above 24.5 N BASF W s PLURONIC 25R1 same as above 4.0 N BASF W liq PLURONIC 25R8 same as above 12.1 N BASF W s PLURONIC L31 same as above 18.5 N BASF W liq PLURONIC L35 same as above 8.0 N BASF W liq PLURONIC L62D same as above 7.0 N BASF W liq PLURONIC L72 same as above 6.5 N BASF W liq PLURONIC L101 same as above 1.0 N BASF W liq PLURAFAC RA40 Linear alcohol alkoxylates 7.0 N BASF W liq PLURAFAC A-24 same as above 5.0 N BASF W liq PLURACOL E400 Polyethylene glycol, MW 400 -- N BASF W liq PLURACOL P410 Polyethylene glycol -- N BASF W liq GAFAC RE-410 Free acid of complex organic -- A GAF s GAFAC BI-750 phosphate ester -- A GAF liq GAFAC RM-410 same as above -- A GAF s PVP K30 Polyvinylpyrrolidone 30,000 MW GAF s EMULPHOGENE BC-420 Tridecyloxypropyl(EO) ethanol -- N GAF liq BC-610 same as above -- N GAF liq NEKAL NF Na + alkyl naphthalenesulfonate -- A GAS liq NEKAL WT-27 sulfonated aliphatic polyester -- A GAS 70% 1 IGEPAL CA-210 octylphenoxy poly(EO) ethanol 3.5 N GAF liq IGEPAL CA-420 same as above 8.0 N GAF liq IGEPAL CA-520 same as above 10.0 N GAF liq IGEPAL CA-620 same as above N GAF liq IGEPAL CA-630 same as above 13.0 N GAF liq IGEPAL CO-210 Nonylphenoxy poly(EO) ethanol 4.6 N GAF liq IGEPAL CO-890 same as above 17.8 N GAF s IGEPAL CO-990 same as above 19.0 N GAF s IGEPAL RC-520 phenoxy poly(EO) ethanol 12.0 N GAF liq IGEPAL RC-620 same as above 10.0 N GAF liq IGEPAL RC-630 same as above 12.7 N GAF liq IGEPAL DM-430 Dialkylphenoxy poly(EO) ethanol 9.4 N GAF liq IGEPAL DM-530 same as above 10.6 N GAF liq IGEPAL DM-710 same as above 13.0 N GAF liq IGEPOX T-33 Na + n-methyl-n-oleoyl taurate -- A GAF liq ALIPAL CD-128 NH.sub.4 + ethoxylate sulfate -- A GAF 58% 1 ALIPAL AB-436 GAF liq ANATROX BL-214 Aliphatic polyether -- N GAF liq ANTARA HR-719 acid ester -- -- GAF liq ANTARA CE-700 acid ester -- -- GAF liq ANTARA LK-500 complex phosphate ester -- A GAF liq ANTARA LM-400 acid ester -- -- GAF liq ALFONIC 1012-60 Ethoxylate 12.0 N Conoco liq ALFONIC 1412-70/1214-70 N Conoco liq SURFONIC LF-17 Alkyl polyoxyalkylene ether 12.2 N Texaco liq WITCAMIDE 5138 an alkanolamide, R2371 9.5 N Witco liq EMPHOS PS-220 phosphate esters -- A Witco liq WITCONOL 14 Polyglycerol fatty acid ester

## WEST

 Generate Collection 

L4: Entry 24 of 26

File: USPT

Sep 26, 1989

DOCUMENT-IDENTIFIER: US 4869885 A

TITLE: Use of oil-soluble surfactants in flue gas desulfurization systems

Detailed Description Paragraph Table (2):

## TABLE II

Summary of Surfactant's Preformance in SO<sub>2</sub> Wet Scrubbers Using Limestone Slurry  
 Positive Effect No Effect Negative Effect

HLB= 2

(SPAN's) HLB= 8 (SPAN & TWEEN) HLB= 4 (SPAN's) IGEPAL CO-210 IEGPAL DM-430, 530, IGEPAL CA-420, 520 IGEPAL CA-210 IGEPAL DM-710 IGEPAL CA-620 IGEPAL RC-630 IGEPAL RC-520 IGEPAL CA-630 IGEPAL CO-890, 990 SPAN 20 SPAN 60 (solids) SPAN 85 SPAN 65 TWEEN 60 TWEEN 80 TX-4156 JOY detergent ALIPAL CD-128 ALIPAL AB-436 IGEPON T-33 PVP K-30 TRITON CF-10 TRITON X-114 TRITON GR-7M TRITON X-155 TRITON X-15 R-2177 DOSS TRITON CF-32 TRITON N-42, N-57 TRITON N-60 TRITON DF-12 TETRONIC 701 TETRONIC 704 (2) TETRONIC 70R1, 110R1 TETRONIC 90R1, 130R1 TETRONIC 150R1 TETRONIC 70R2 TETRONIC 25R8, 150R8 TETRONIC 908 TETRONIC 70R4 TETRONIC 50R4, 90R8 TETRONIC 90R4 TETRONIC 150R4 TETRONIC 110R7 TETRONIC 1304, 1502 PLURONIC F77, F68 PLURACOL E400 PLURONIC L35 PLURONIC L31 PLURONIC L62D PLURONIC L72 PLURONIC 25R1 PLURONIC L101 PLURAFAC RA-40 PLURAFAC A-24 PLURACOL P-410 GAFAC RM-410, RS-410 GAFAC RE-410 GAFAC BI-750 (rxn) acidic ANTARA LE-700 ANTARA LM-400 ANTARA HR-719 ANTARA LK-500 ANTROX BL-214 ARLACEL 83 ARLACEL 60 ARLACEL 165 ATMUL 500 ATSURF 2802 MYRJ 53 NIAX POLYOL LHT-240 ALFONIC 1012-60 ALFONIC 1214-70 SURFONIC LF-17 EMPHOS PS-220 EMULPHOGENE BC-610 EMULPHOGENE BC-420 NEKAL NF NEKAL WT-27 DOSS OT-100 Hystrene 3695 Niax Polyol BRIJ 30 BRIJ 93 BRIJ 52 WITCAMIDE 5138 AMP-95 (R-2233) Ethoduomeen T-13 WITCONOL 14 Mackamide NOA Mackamide Ole. DEA Mackamide Soyamide DEA KELIG 3000

Detailed Description Paragraph Table (3):

2 GLOSSARY SURFACTANTS USED IN SO<sub>2</sub> ABSORPTION MODUELLE TESTING Name Chemical Structure HLB T\*.sup.1 M\*\*.sup.2 Form

SPAN 20

Sorbitan monolaurate 8.6 N ICI liq.sup.3 SPAN 40 Sorbitan monopalmitate 6.7 N ICI liq SPAN 60 Sorbitan monostearate 4.7 N ICI liq SPAN 65 Sorbitan tristearate 2.1 N ICI liq SPAN 80 Sorbitan monoleate 4.3 N ICI liq SPAN 85 Sorbitan trioleate 1.8 N ICI liq HLB=2 8% SPAN 80 + 92% SPAN 85 2.0 N ICI liq HLB=4 88% SPAN 80 + 12% SPAN 85 4.0 N ICI liq HLB=8 65% SPAN 80 + 35% TWEEN 80 8.0 N ICI, liq Atlas ARLACEL 60 Sorbitan monostearate 4.7 N ICI s ARLACEL 83 Sorbitan sequioleate 3.7 N ICI liq ARLACEL 165 Glycerol monostearate POE 11.0 N ICI s stearate BRIJ 30 POE (4) lauryl ether 9.7 N ICI liq BRIJ 52 Polyoxyethylene (2) cetyl ether 5.3 N ICI s BRIJ 93 Polyoxyethylene (2) oleylether 4.9 N ICI liq MYRJ 53 Polyoxyethylene (50) stearate 17.9 N ICI liq ATMUL 500 2.5 N ICI liq ATSURF 2802 Butylated hydroxyanisole 3.5 N ICI s TWEEN 60 POE (20) sorbitan monostearate 14.9 N Atlas wax TWEEN 80 POE (20) sorbitan monoleate 15.0 N Atlas liq TRITON N-42 Nonylphenoxypoly(EO) ethanol 9.1 N Rohm & H liq TRITON N-57 Nonylphenoxypoly(EO) ethanol 10.0 N Rohm & H liq TRITON N-60 Nonylphenolpoly(EO) ethanol -- N Rohm & H liq TRITON X-15 Octylphenoxypolyethoxyethanol 3.6 N Rohm & H liq TRITON N-114 Octylphenolethyoxylate 12.4 N Rohm & H liq TRITON N-155 Alkylarylpolyether alcohol 12.5 N Rohm & H 90% 1 TRITON DF-12 Modified POE linear alcohol 10.6 N Rohm & H liq TRITON GR-7M Dicetyl sodium sulfosuccinate -- A Rohm & H 67% 1 (DOSS) TRITON CF-10 Alkylaryl polyether 14.0? N Rohm & H liq TRITON CF-21 same as above -- N Rohm & H liq TRITON CF-32 same as above -- N Rohm & H liq TETRONIC 701 block copolymers of EO

& PO 3.0 N BASF W liq TETRONIC 702 same as above 7.0 N BASF W liq TETRONIC 704 same as above 15.0 N BASF W liq TETRONIC 901 same as above 2.5 N BASF W liq TETRONIC 808 same as above 30.5 N BASF W s TETRONIC 50R4 block copolymers of EO & PO 8.9 N BASF W liq TETRONIC 70R2 same as above 4.8 N BASF W liq TETRONIC 70R4 same as above 7.9 N BASF W liq TETRONIC 90R4 same as above 7.1 N BASF W liq TETRONIC 90R8 same as above 12.9 N BASF W s TETRONIC 110R7 same as above 9.5 N BASF W s TETRONIC 150R4 same as above 5.4 N BASF W pas TETRONIC 150R8 same as above 11.2 N BASF W s TETRONIC 70R1 same as above 2.9 N BASF W liq TETRONIC 90R1 same as above 2.4 N BASF W liq TETRONIC 110R1 same as above 1.9 N BASF W liq TETRONIC 130R1 same as above 1.4 N BASF W liq TETRONIC 150R1 same as above 1.0 N BASF W liq TETRONIC 1304 block copolymers of PO & EO 13.5 N BASF W pas TETRONIC 1502 same as above 5.0 N BASF W liq PLURONIC F68 block copolymers of PO & EO 30.5 N BASF W liq PLURONIC F77 same as above 24.5 N BASF W s PLURONIC 25R1 same as above 4.0 N BASF W liq PLURONIC 25R8 same as above 12.1 N BASF W s PLURONIC L31 same as above 18.5 N BASF W liq PLURONIC L35 same as above 8.0 N BASF W liq PLURONIC L62D same as above 7.0 N BASF W liq PLURONIC L72 same as above 6.5 N BASF W liq PLURONIC L101 same as above 1.0 N BASF W liq PLURAFAC RA40 Linear alcohol alkoxylates 7.0 N BASF W liq PLURAFAC A-24

**WEST**  

L4: Entry 25 of 26

File: USPT

Apr 9, 1985

DOCUMENT-IDENTIFIER: US 4509597 A

TITLE: Soda-anthraquinone lignin sacrificial agents in oil recovery

Detailed Description Text (6):

The procedure of Example 1 was followed except that the lignin solution was replaced by the following system: 42 g/l brine, 2% petroleum sulfonate surfactant (Petrostep 465, Stepan, Inc.), and 1% of a sulfonated oxyethylnonyl phenol surfactant (Atsurf 1910) (ICI Americas, Inc.). The procedure was repeated seven times resulting in an average of 54.8% oil recovery.

Detailed Description Text (8):

The procedure of Example 1 was repeated except that the lignin solution was replaced by the following system: 42 g/l brine, 2% Petrostep 465, 1% Atsurf 1910 and 1% soda-anthraquinone lignin. The results obtained from seven repetitions of the procedure showed an average of 59.2% oil recovery.

Detailed Description Text (10):

The procedure of Example 1 was repeated except that, following the flush of the column with the soda-anthraquinone lignin solution, the following system was added to the column; 42 g/l brine, 2% Petrostep 465 and 1T Atsurf 1910. The results from seven repetitions of the procedure revealed an average of 64.8% oil recovery.

**WEST****End of Result Set**  

L4: Entry 26 of 26

File: USPT

Oct 10, 1978

DOCUMENT-IDENTIFIER: US 4119547 A

TITLE: High temperature lubricant composition

Detailed Description Text (19):2.0% by weight lypophilic surfactant, polyol trioleate (I.C.I. Atsurf 2802)Detailed Description Text (20):3.0% by weight hypophilic surfactant, ethoxylated polyol trioleate (I.C.I. Atsurf 2802)Detailed Description Text (25):5.0% by weight lypophilic surfactant polyol trioleate (Atsurf 2802 I.C.I.)Detailed Description Text (26):4.0% by weight lypophilic surfactant, ethoxylated polyol stearate (I.C.I. Atsurf 2823)

**WEST**  

L10: Entry 26 of 30

File: JPAB

Apr 3, 1990

PUB-NO: JP402092281A  
DOCUMENT-IDENTIFIER: JP 02092281 A  
TITLE: NOVEL LIPASE AND PRODUCTION THEREOF

PUBN-DATE: April 3, 1990

## INVENTOR-INFORMATION:

NAME	COUNTRY
NISHIOKA, MASAAKI	
JOKO, KATSUHIRO	
TAKAMA, MICHIHIRO	
MATSUI, RISAKU	

## ASSIGNEE-INFORMATION:

NAME	COUNTRY
SHOWA DENKO KK	

APPL-NO: JP63240939

APPL-DATE: September 28, 1988

US-CL-CURRENT: 435/198; 435/921  
INT-CL (IPC): C12N 9/20

## ABSTRACT:

PURPOSE: To obtain a novel lipase having optimum pH on the high alkali side and being low in optimum temperature and suitable for detergent by culturing a yeast belonging to the genus Candida and having lipase-producing ability in a culture medium.

CONSTITUTION: A yeast (e.g., SD-701 strain, FERM P-10137) belonging to the genus Candida and having a lipase-producing ability is cultured in a culture medium to produce a lipase and collect the lipase from the cultured product. In the obtained novel lipase, optimum pH when triolein emulsion is used as a substrate is 9-10 and optimum temperature when the same substrate is used is 37-40°C and molecular weight measured by SDS-polyacrylamide electrophoresis method is 35000±20000 and molecular weight measured by gel permeation method is 43000. Isoelectric point measured by isoelectric polyacrylamide gel electrophoresis is 4.8±0.2.

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## WEST

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L18: Entry 1 of 2

File: DWPI

Apr 16, 1982

DERWENT-ACC-NO: 1982-46652E

DERWENT-WEEK: 198223

COPYRIGHT 2003 DERWENT INFORMATION LTD

TITLE: Lipase prep. - by culturing Pseudomonas fluorescence bio:type I on medium contg. fatty acids, their ester(s) and inorganic nitrogen cpds.

## PATENT-ASSIGNEE:

ASSIGNEE	CODE
AGENCY OF IND SCI & TECHNOLOGY	AGEN
NIPPON OILS & FATS CO LTD	NIOF

PRIORITY-DATA: 1980JP-0135998 (September 30, 1980)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 57063086 A	April 16, 1982		003	
JP 82042312 B	September 8, 1982		000	

INT-CL (IPC): C12N 9/20; C12R 1/38; C21N 9/20

*Type of  
inorganic Sust.*

ABSTRACTED-PUB-NO: JP 57063086A

## BASIC-ABSTRACT:

Pseudomonas fluorescence biotype I (Fermentation Research Institute assigned No.5495) cultured on the medium containing fatty acids or its esters and inorganic nitrogen compounds liberates a large amount of lipase with high activity.\ Lipase is used for a digestive, processing foods or hydrolyzing fats and oils. The microbial culture using inorganic nitrogen cpds. is easy to pasteurise culture medium, considerably reduces contaminating microorganisms and is cheaper than using organic cpds.

Fatty acids having 2-22C, e.g. oleic acid, myristic acid, or stearic acid, or fatty acid esters i.e. esters formed between C2, C6 and 1-OH-6-OH alcohols and above acids e.g. beef tallow, olive oil, monoolefin diolein, oleic acid methyl ester or palmitic acid ethyl ester are used in general. Nitrate e.g. sodium or potassium salt or ammonium salt e.g. ammonium sulphate or chloride is used as inorganic nitrogen cpd. Lipase activities were 270 units per ml of culture medium and 250 units per mg of protein content on the new medium and respectively 150 units and 70 units on the medium containing polysaccharides and organic nitrogen cpds.

TITLE-TERMS: LIPASE PREPARATION CULTURE PSEUDOMONAS FLUORESCENT BIO TYPE MEDIUM CONTAIN FATTY ACID ESTER INORGANIC NITROGEN COMPOUND

DERWENT-CLASS: D16

CPI-CODES: D05-C03; D05-H01;

L3 ANSWER 2 OF 2 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.  
AB Sixteen strains belonging to 13 genera [Hericium flagellum (Scop.) ex Fr.,  
*Laetiporus sulphureus* (Bull. ex Fr.) Murrill, *Pycnoporus sanguineus* (L. ex Fr.) Murrill, *Phellinus chrysoloma* (P. Karst.) Pil., P. ignarius (L. ex Fr.) Quel., *Polyporus varius* Fr., *Climacocystis borealis* (Fr.) Kotl. et Pouz., *Pleurotus ostreatus* (Jacq. ex Fr.) Kumm., *Fomitopsis pinicola* (Sw. ex Fr.) P. Karst., *Inonotus hispidus* (Bull. ex Fr.) P. Karst., *Pholiota adiposa* (Fr.) Kumm., P. aurivela (Batsch. ex Fr.) Kumm., *Piptoporus betulinus* (Bull. ex Fr.) P. Karst. isolates I and II, *Sarcodontia setosa* (Pers.) Donk., *Oudemansiella mucida* (Schrader ex Fr.) Hohnel] of wood-destroying Basidiomycetes were tested for their ability to produce extracellular lipase. Fifteen species possessed lipolytic activity. S. setosa was found to be superior in its capability of hydrolyzing lipids.

AN 1983:186889 BIOSIS

DN BA75:36889

TI LIPOLYTIC ACTIVITY IN SUBMERGED CULTURES OF SOME WOOD DESTROYING BASIDIOMYCETES.

AU NERUD F; ZOUCHOVA Z; MUSILEK V

CS DEP. EXP. MYCOL., INST. MICROBIOL., CZECH. ACAD. SCI., VIDENSKA 270, 142 02 PRAGUE 4.

SO CESKA MYKOL, (1982) 36 (1), 45-46.

CODEN: CEMYAE. ISSN: 0009-0476.

FS BA; OLD

LA English

Microorganisms

## WEST

 Generate Collection 

L11: Entry 71 of 74

File: DWPI

Jul 2, 1993

DERWENT-ACC-NO: 1993-247572  
DERWENT-WEEK: 200020  
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*Primary*

TITLE: Prepn. of immobilised enzyme - in presence of activity expressing agent with low peroxide valve

## PATENT-ASSIGNEE:

ASSIGNEE	CODE
KAO CORP	KAOS

PRIORITY-DATA: 1991JP-0342866 (December 25, 1991)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 05168480 A	July 2, 1993		004	C12N011/00
JP 3024845 B2	March 27, 2000		004	C12N011/00

## APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 05168480A	December 25, 1991	1991JP-0342866	
JP 3024845B2	December 25, 1991	1991JP-0342866	
JP 3024845B2		JP 5168480	Previous Publ.

INT-CL (IPC): C12N 9/20; C12N 11/00

ABSTRACTED-PUB-NO: JP 05168480A

## BASIC-ABSTRACT:

Immobilised enzyme is prep'd. in the presence of activity expressing agent of below 2 meq/kg. pref. up to 1 meq/kg. peroxide value. Pref. the enzyme is lipase and the activity expressing agent is at least one fat soluble cpd. selected from fatty acids, deriv. of fatty acids, alcohols, carbonyl cpds., ethers, halogenated alkyls, phospholipids and surfactants.

USE/ADVANTAGE - A highly active enzyme can be prep'd. by inhibiting the oxidn. of the activity expressing agent.

In an example, weak anionic ion exchange resin (Duolite A-568 (RTM) Duolite International Co., 300 g.) was added to 0.1 N NaOH (3000 ml.). After washing with water, the pH was equilibrated with pH 5, 500 mM, 50 mM acetate buffer, filtered and dried in vacuo. To the resin (200 g.), peroxide value 0.14 meq/kg. oleic acid in 10% ethanol soln. (2 l.) was added and stirred at 20 deg.C for 30 min., then filtered and ethanol was distilled away in vacuo. To the resin (150 g.) lipase A-10 (RTM; Nagase Seikagaku Kogyo Co.) 50 mM preliminarily dissolved in pH 5, acetate buffer (10%) 1500 ml. was added and stirred for 2 hrs. Next, after washing with pH 5, 50 mM acetate buffer for 1 hr., resin was sepd. by filtration, and vacuum dried as to H<sub>2</sub>O content below 5%. Yield of activity was 92%. Almost all lipase added was immobilise

**WEST**  

L11: Entry 65 of 74

File: JPAB

Aug 9, 1988

PUB-N0: JP363191802A

DOCUMENT-IDENTIFIER: JP 63191802 A

TITLE: MANUFACTURE OF FATTY ACID ESTER OF CYCLODEXTRINS

*Primary*

PUBN-DATE: August 9, 1988

## INVENTOR-INFORMATION:

NAME

COUNTRY

KIKUCHI, KAZUNORI

SUGIYAMA, HIROSHI

## ASSIGNEE-INFORMATION:

NAME

COUNTRY

ASAHI DENKA KOGYO KK

APPL-NO: JP62024395

APPL-DATE: February 4, 1987

US-CL-CURRENT: 536/112

INT-CL (IPC): C08B 37/16

## ABSTRACT:

PURPOSE: To produce the title ester in a high yield, which is soluble in oils and not colored, by esterifying cyclodextrins with an 8&sim;22C medium or higher fatty acid in the presence of a hydrolase to selectively esterify the primary OH groups.

CONSTITUTION: Cyclodextrins are esterified with a medium or higher fatty acid having a chain length of 8&sim;22C (e.g., stearic acid or oleic acid) in the presence of a hydrolase (e.g., lipase). Thereby, the primary OH groups of the cyclodextrins can be selectively esterified to produce fatty acid esters of cyclodextrins without any side reaction which will give, for example, a colored product. Since the produced esters are soluble in oils and not colored, they can be suitably used as surfactants in the fields of cosmetics, medicines, foods, etc.

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L10: Entry 29 of 30

File: DWPI

Apr 3, 1990

DERWENT-ACC-NO: 1990-144895

DERWENT-WEEK: 199019

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TITLE: Prodn. of new lipase to improve detergency of detergent - by culturing  
Candida yeast which forms lipase

## PATENT-ASSIGNEE:

ASSIGNEE	CODE
SHOWA DENKO KK	SHOW

PRIORITY-DATA: 1988JP-0240939 (September 28, 1988)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 02092281 A	April 3, 1990		000	

## APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 02092281A	September 28, 1988	1988JP-0240939	

INT-CL (IPC): C12N 9/20; C12R 1/72

ABSTRACTED-PUB-NO: JP 02092281A

## BASIC-ABSTRACT:

New lipase, generated by yeast belonging to Candida, is suitable at pH9.0-10.0 and at 37-40 deg.C in triolein emulsion as substrate; 35000+/-2000 molecular wt. when measured by SDS-polyacrylamide electrophoresis and 43000 in molecular wt. when measured by gel filtration; having isoelectric pt. at 4.8+/-0.2. Prodn. of new lipase comprises culturing lipase-generative yeast belonging to Candida in medium and extracting lipase from culture prod.

New lipase is obtd. by culturing Candida SD-701, a lipase-generative bacterium belonging to Candida, in medium of pH6-7 for 12-36 hours at 15-37 (20-35) deg.C, sepg. fungi from culture soln. by filtration or centrifugation to obtain filtrate and purifying by salting out, sedimentation or freeze-drying. It acts on glyceride to hydrolyse ester.

USE/ADVANTAGE - New lipase is used as enzyme for detergent. It improves detergent in detergency.

CHOSEN-DRAWING: Dwg.0/4

TITLE-TERMS: PRODUCE NEW LIPASE IMPROVE DETERGENT DETERGENT CULTURE CANDIDA YEAST FORM LIPASE

DERWENT-CLASS: D16 D25

CPI-CODES: D05-C03C; D11-B02;

## WEST

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L11: Entry 70 of 74

File: DWPI

Oct 29, 1996

DERWENT-ACC-NO: 1997-017774

DERWENT-WEEK: 199702

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oleic acid  
lipase  
+ Surfactant  
primary

TITLE: Detergent compsn. with high detergency on washing - contains lipase and is obtd. by culturing acinetobacter or pseudomonas genus microbe.

## PATENT-ASSIGNEE:

ASSIGNEE	CODE
SHOWA DENKO KK	SHOW

PRIORITY-DATA: 1995JP-0092778 (April 18, 1995)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 08283787 A	October 29, 1996		016	C11D003/386

## APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 08283787A	April 18, 1995	1995JP-0092778	

INT-CL (IPC): C11 D 3/386; C12 N 1/20; C12 N 9/20; C12 N 9/20; C12 R 1:01; C12 N 9/20; C12 R 1:38

ABSTRACTED-PUB-NO: JP 08283787A

## BASIC-ABSTRACT:

Detergent compsn. contains a lipase. The oleic acid amount formed is upto 10% when measured in a detergent soln. contg. 200-400 ppm anionic surfactant, 1,000 ppm Na perborate and 100 ppm tetracytylethylenediamine when the oleic acid amount formed with no additive of detergent is assumed to be 100% by using triolein emulsion as the substrate. Also claimed is prepn. of the detergent compsn. including culturing an Acinetobacter genus microbe or a Pseudomonas genus microbe and preparing a lipase from the culture, a lipase originated from an Acinetobacter genus microbe or a Pseudomonas genus microbe having the following properties: (1) Action: It reacts with triglyceride to hydrolyse its ester bond; (2) acting pH of 4-12 when measured at pH 4-12 by using triolein emulsion as the substrate and the opt. pH is 9.5-11.5, (3) acting temp. of 30-80 deg. C when measured at 30-80 deg. C by using triolein emulsion as the substrate and the opt. temp. is 55-70 deg. C. (4) mol.wt. is 29000-35000 by SDS-PAGE. (5) The oleic acid amount formed is upto 10% when measured in a detergent soln. contg. 200-400 ppm anionic surfactant, 1,000 ppm Na perborate and 100 ppm tetracytylethylenediamine when the oleic acid amount formed with no addition of detergent is 100% by using triolein emulsion as the substrate; prepn. of the lipase in which the Acinetobacter genus microbe or a Pseudomonas genus microbe is cultured, and Acinetobacter baumannii SD706 (FERM P-14882) or SD707 (FERM P-14882), Acinetobacter haemolyticus SD708 (FERM P-14883), or Pseudomonas sp. SD710 (FERM P-14884).

ADVANTAGE - The compsn. has high detergency in the washing condition.